BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 30186 (Sub-No. 3)

TONGUE RIVER RAILROAD COMPANY -- RAIL CONSTRUCTION AND OPERATION -- WESTERN ALIGNMENT IN ROSEBUD AND BIG HORN COUNTIES, MONTANA

EXHIBIT H -- ENVIRONMENTAL REPORT

Prepared by:

Robert J. Davis
RADIAN INTERNATIONAL
8501 Mopac Boulevard
Austin, TX 78759
(512) 454-4797

Betty Jo Christian
Timothy M. Walsh
David H. Coburn
Linda S. Stein
Sara Beth Watson
J. Patrick Kennedy
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue, N.W.
Washington, DC 20036
(202) 429-3000

Attorneys for Applicant
Tongue River Railroad Company

Table of Contents

Executive Summary ES-1

1.0 Introduction 1-1

1.1 Background 1-1
1.2 Purpose and Need for Action 1-5
1.2.1 Purpose of the Proposed Action 1-5
1.2.2 Need for the Proposed Action 1-8
1.3 Overview of this ER 1-11

2.0 Description of Existing Environment 2-1

2.1 Topography 2-1
2.2 Land Use 2-1
2.3 Soils and Geology 2-3
2.4 Hydrology and Water Quality 2-4
2.5 Terrestrial Ecology 2-8
2.5.1 Vegetation 2-8
2.5.2 Terrestrial Wildlife 2-10
2.6 Aquatic Ecology 2-14
2.6.1 Fishery Resources, Tongue River Reservoir 2-14
2.6.2 Fishery Resources, Tongue River 2-15
2.7 Social and Economic 2-18
2.7.1 Population for the Five County Region 2-19
2.7.2 Employment, Income, and Poverty Rates for the Five County Region 2-19
2.7.3 Governmental Structure and Services for Five County Region 2-20
2.7.4 Immediate Project Area 2-22
2.7.5 Northern Cheyenne Indian Reservation 2-25
2.7.6 Crow Indian Reservation 2-26
2.8 Transportation 2-27
2.9 Climate and Air Quality 2-29
2.10 Noise 2-31
2.11 Cultural Resources 2-33
2.11.1 General Overview 2-34
2.11.2 Property Types and Qualities of Significance: Prehistory 2-36
2.11.3 Property Types and Qualities of Significance: History 2-36
2.11.4 Traditional Cultural Properties 2-37
2.12 The Northern Cheyenne and Crow Indian Tribes 2-37

Table of Contents (continued)

3.0 Description of the Proposed Action and its Alternatives 3-1

3.1 Summary of The Overall Tongue River Railroad Project 3-1
3.2 Description of the Proposed Action and Alternative Routes 3-2
3.2.1 Construction Activities and Techniques 3-2
3.2.2 Operation and Maintenance 3-10
3.2.3 Western Alignment—Route Description 3-12
3.2.4 Four Mile Creek Alternative—Route Description 3-13
3.2.5 The Original Preferred Alignment—Route Description 3-13
3.3 Summary Comparison of Western Alignment and Alternative Routes 3-14
3.4 No-Build Alternative 3-14
3.5 Related Actions (and indirect impacts) 3-15

4.0 Impacts of the Proposed Action and its Alternatives 4-1

4.1 Land Use 4-1
4.1.1 Construction 4-1
4.1.2 Operation and Maintenance 4-4
4.2 Social and Economic 4-5
4.2.1 Introduction 4-5
4.2.2 Construction 4-6
4.2.3 Operation and Maintenance 4-14
4.2.4 Environmental Justice 4-21
4.3 Transportation 4-22
4.3.1 Construction 4-24
4.3.2 Operation and Maintenance 4-27
4.4 Safety 4-29
4.4.1 Construction 4-31
4.4.2 Operation and Maintenance 4-32
4.5 Energy 4-37
4.5.1 Construction 4-37
4.5.2 Operation 4-38
4.5.3 Burlington Northern Sante Fe 4-39
4.6 Tongue River Dam 4-40
4.6.1 Construction Impacts 4-40
4.6.2 Operation and Maintenance 4-40
4.7 Soils and Geology 4-42
4.7.1 Construction 4-42
4.7.2 Operation and Maintenance 4-47

Table of Contents (continued)

4.8 Hydrology and Water Quality 4-47
4.8.1 Construction 4-47
4.8.2 Operation and Maintenance 4-55
4.9 Aquatic Ecology 4-56
4.9.1 Construction 4-56
4.9.2 Operation and Maintenance 4-60
4.10 Terrestrial Ecology 4-61
4.10.1 Construction 4-62
4.10.2 Operation and Maintenance 4-70
4.11 Air Quality 4-74
4.11.1 Construction 4-77
4.11.2 Operation 4-78
4.11.3 Air Quality Impacts 4-79
4.12 Noise 4-79
4.12.1 Construction 4-79
4.12.2 Operation and Maintenance 4-80
4.12.3 Noise Impacts to Tongue River Reservoir State Park 4-82
4.13 Impact to Visual Resources 4-86
4.14 Impacts to the Northern Cheyenne Indian Reservation and to the Crow Indian Reservation 4-87
4.14.1 Impacts to the Northern Cheyenne Indian Reservation 4-88
4.14.2 Impacts to Crow Indian Reservation 4-90
4.15 Cultural Resources 4-91
4.15.1 Introduction 4-91
4.15.2 Construction 4-92
4.15.3 Direct Impacts 4-94
4.15.4 Indirect Impacts 4-97
4.15.5 Operation and Maintenance 4-98
4.15.6 Consultation and Mitigative Measures 4-98

5.0 Unavoidable Adverse Environmental Impacts of the Proposed Action and its Alternatives 5-1

5.1 Land Use 5-1
5.2 Socio-economic 5-1
5.3 Transportation 5-1
5.4 Safety 5-2
5.5 Energy 5-2
5.6 Soils 5-2
5.7 Hydrology and Water Quality 5-3
5.8 Aquatic Ecology 5-3

Table of Contents (continued)

5.9 Terrestrial Ecology 5-4
5.10 Biodiversity 5-5
5.11 Air Quality 5-6
5.12 Noise 5-6
5.13 Aesthetics 5-7
5.14 Native Americans 5-7
5.15 Cultural Resources 5-8

6.0 Recommended Mitigation Measures 6-1

6.1 Land Use Mitigation Measures 6-1
6.2 Social and Economic Mitigation Measures 6-2
6.3 Transportation Mitigation Measures 6-2
6.4 Air Quality Mitigation Measures 6-3
6.5 Noise Mitigation Measures 6-4
6.6 Safety Mitigation Measures 6-4
6.7 Hydrology and Water Quality Mitigation Measures 6-7
6.8 Aquatic and Terrestrial Ecology Mitigation Measures 6-8
6.9 Wildlife Mitigation Measures 6-17
6.10 Cultural Resources Mitigation Measures 6-17
6.11 Tongue River Dam Integrity Mitigation Measures 6-18

7.0 Informal Consultation and Initial Agency Comments 7-1

Appendix A: Coordination and Informal Consultation

Appendix B: References

Appendix C: List of Preparers

Appendix D: Surface Water Analyses

Appendix E: EPA's Design Specifications for River Bank Stabilization

Appendix F: Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement

Appendix G: Programmatic Agreement

Appendix H: Biological Assessment and Biological Opinion

List of Figures

ES-1 Location of the Tongue River Railroad ES-2

ES-2 Alternative Routes for Southernmost Portion of Tongue River Railroad ES-4

1-1 Location of the Tongue River Railroad 1-2

1-2 Alternative Routes for Southernmost Portion of Tongue River Railroad 1-6

2-1 Location of Ashland Division and Tongue River Division Census Units 2-23

2-2 Location of Roads for the TRRC Project 2-28

2-3 Potentially Eligible Cultural Resources 2-35

2-4 Location of the Northern Cheyenne and Crow Indian Reservations 2-38

3-1 Typical Cross Sections of Rail Line 3-3

3-2 Comparison of Grade Profiles and Lengths of Three Alternative Routes 3-7

4-1 Location of Roads for the TRRC Project 4-23

4-2 Typical Long Span Bridge 4-25

4-3 Possible 404 Jurisdictional (Wetland) Locations 4-49

4-4 Location of Cuts Which Attenuate Noise and Screen Visual Impacts for the Western Alignment and Its Alternative Routes 4-83

4-5 Proximity of Tongue River Reservoir State Park & Camping Areas to Various Route Alternatives 4-85

List of Tables

ES-1 Comparative Summary Impacts Table ES-8

1-1 Selected Construction and Operational Factors and Cost Comparisons of Proposed Western Alignment and the Approved Four Mile Creek Alternative 1-8

1-2 Coal Tonnage Forecasts over Tongue River Railroad 1-9

2-1 Comparison of Surface Water Quality of Tongue River, Tongue River Dam, and Reservoir with Surface Water Quality Criteria 2-6

2-2 Total Suspended Sediment Data for Tongue River 2-7

2-3 Fishery Zones in the Tongue River 2-15

2-4 Tongue River Reservoir and Tongue River Fishes 2-17

2-5 Population (Actual and Estimated) for the Five County Region 2-19

2-6 Unemployment Rates, Incomes, and Poverty Rates for the Five County Region 2-20

2-7 Selected 1990 Census Data for the Tongue River and Ashland Division 2-24

2-8 Traffic Statistics for Selected Segments of Area Roads 2-29

2-9 Comparison of Sound Levels for Typical Levels 2-32

3-1 Comparison of Earthwork for Cuts and Fills by Route 3-9

3-2 Tongue River Railroad Operations Activities Assuming TRRC Operation Across the Western Alignment and Alternative Routes for Year 2005 3-11

3-3 Comparative Summary Impacts Table 3-16

4-1 Land Ownership and Land Use in ROW for Proposed Action 4-2

4-2 Estimate of Average Construction Labor Requirements by Year and by Route 4-7

List of Tables (continued)

4-3 Estimate of the Breakdown of Area Construction Employment (peak demand) by Community 4-8

4-4 Distribution of Local Annual Construction Wages Among Communities 4-9

4-5 Projected Railroad Non-Labor Construction Expenditures by Location of Expenditure for the Proposed Action (Western Alignment) 4-11

4-6 Direct and Indirect Employment Due to Construction of the Tongue River Railroad 4-12

4-7 Predicted Temporary Increase in Regional Population as a Result of Construction 4-13

4-8 Number of Permanent New Jobs Created in Initial Year of Operations of the Tongue River Railroad Over the Western Alignment Assuming TRRC Operates its Own Trains 4-16

4-9 Estimation of BNSF Crew Member Job Losses in Initial Year of Operations Over the Tongue River Railroad 4-17

4-10 Estimate of Population Change Resulting from Initial Year of Operations Over the Tongue River Railroad 4-19

4-11 Fiscal Revenues to the State from Property Taxes on the Tongue River Railroad Company 4-19

4-12 Fiscal Revenues to Rosebud County from Property Taxes on the Tongue River Railroad Company 4-20

4-13 Fiscal Revenues to Custer County from Property Taxes on the Tongue River Railroad Company 4-20

4-14 Fiscal Revenues to Big Horn County from Property Taxes on the Tongue River Railroad Company 4-20

4-15 Average Daily Highway Totals 4-30

4-16 Projected Accident Rates for the Year 2005 4-33

4-17 Train-Miles for Each Alignment in the Year 2005 4-34

List of Tables (continued)

4-18 Train Derailments for Each Alignment in the Year 2005 4-34

4-19 Estimate of Annual Fuel Consumption Over the Entire Tongue River Railroad by Route for the Year 2005 4-39

4-20 Potential Gross Soil Erosion Estimate for Proposed Action and Alterntive Routes 4-44

4-21 Stream and River Crossings for the Western Alignment, Original Preferred Alignment, and Four Mile Creek Alternative 4-48

4-22 Annual Worst-Case Increase in TSS, Tongue River 4-50

4-23 Estimated Water Usage During Construction for the Three Alignments . . . 4-54

4-24 Disturbed Acres by Habitat Type for the Western Alignment and Alternative Routes 4-64

4-25 Short-Term Emission Rate Estimates by Route 4-75

4-26 Emissions from Operations of Locomotives by Route 4-75

4-27 Emission Factors 4-76

4-28 Construction and Operation Noise Impacts to Sensitive Receptors Along the Western Alignment, the Four Mile Creek Alternative, and Original Preferred Alignment 4-81

4-29 Cultural Resources Properties Within 200 Feet of the ROW of Each Route Alternative 4-92

4-30 Cultural Resources Properties Within a 3,000-Foot Corridor of Each Route ROW 4-93

Acronyms and Abbreviations

ADHT	average daily highway traffic
afy	acre feet per year
AIRFA	American Indian Religious Freedom Act
BLM	Bureau of Land Management
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
BTU(s)	British thermal unit(s)
cfs	cubic feet per second
CO	carbon monoxide
COE	Corps of Engineers
CWR	continuous-welded rail
dB	decibel(s)
dBA	A-weighted decibel(s)
DEIS	Draft Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
FEIS	Final Environmental Impact Statement
USFWS	U.S. Fish & Wildlife Service
g/L	gram(s) per liter
gpm	gallon(s) per minute
HUD	Department of Housing and Urban Development

Acronyms and Abbreviations (continued)

ICC	Interstate Commerce Commission
L_{dn}	day-night levels
MDFWP	Montana Department of Fish, Wildlife, and Parks
MDNRC	Montana Department of Natural Resources and Conservation
MDSL	Montana Department of State Lands
MDT	Montana Department of Transportation
mg/L	milligram(s) per liter
MNHP	Montana Natural Heritage Program
mph	miles per hour
MSL	mean sea level
MTA	Montana Taxpayers Association
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_x	oxides of nitrogen
PM_{10}	fine particulate matter (10 micrometers in diameter)
Radian	Radian International LLC
ROW	right-of-way
RUSLE	Revised Universal Soil Loss Equation
SCS	Soil Conservation Service
SEA	Section of Environmental Analysis
SEC	specific electrical conductance

Acronyms and Abbreviations (continued)

SHPO	(Montana) State Historic Preservation Office
SO_2	sulfur dioxide
STB	U.S. Surface Transportation Board
TDS	total dissolved solids
TRRC	Tongue River Railroad Company
TSS	total suspended solids
$\mu g/m^3$	microgram(s) per cubic meter
USBR	United States Bureau of Reclamation
USGS	U.S. Geological Survey
USLE	Universal Soil Loss Equation
VOC	volatile organic compound
μmho/cm	micromho(s)/centimeter

Executive Summary

Background

In 1996 the Tongue River Railroad Company (TRRC) was authorized by the Surface Transportation Board (STB) to construct and operate an approximately 51-mile segment of railroad in Rosebud and Big Horn counties of Montana. This segment is called the Tongue River Extension (Extension) because the northern 89-mile segment of the Tongue River Railroad had already been approved by the STB in 1986. The 1996 STB action allows the TRRC to construct and operate the entire Tongue River Railroad which, when completed, will connect with a Burlington Northern Santa Fe (BNSF) line in Miles City, Montana in the north and with the Spring Creek Mine rail spur near Decker, Montana in the south.

As shown in Figure ES-1, the Tongue River Railroad will more efficiently transport coal from three mines near Decker to electric power plants in the upper Midwest. Construction of the new line will also facilitate the development of new coal mines in the Decker and the Ashland area. The Tongue River Railroad is essential to the development of new "compliance coal" reserves in Montana and will reduce by more than 320 miles the roundtrip distance that unit coal trains currently must travel between Montana's Powder River Basin and Midwestern utilities. The 1990 Clean Air Act has created a strong market for the low sulfur coals in the Powder River Basin of Wyoming and Montana because they can comply with stringent new emission standards without the need to add costly flue gas desulfurization units.

In its 1996 decision to allow construction of the Extension, the STB stipulated that the line must follow the route of the Four Mile Creek Alternative rather than TRRC's preferred route ("Original Preferred Alignment") which would have continued generally up (south) the River crossing the river five times. The Four Mile Creek Alternative was considered as an alternative in the Environmental Impact Statement (EIS) for the Extension. Some environmental agencies, individuals, and nongovernmental groups expressed concern that the Original Preferred Alignment threatened the ecology and character of the upper Tongue River Valley below the reservoir. Figure ES-2 shows the location of these two alignments as well as the Western Alignment which is the subject of the current TRRC application.

The STB approved the Tongue River Railroad Extension via the Four Mile Creek Alternative despite TRRC's concerns regarding economic and safe operation over that alignment. Those concerns related primarily to long steep grades associated with the Four Mile Creek

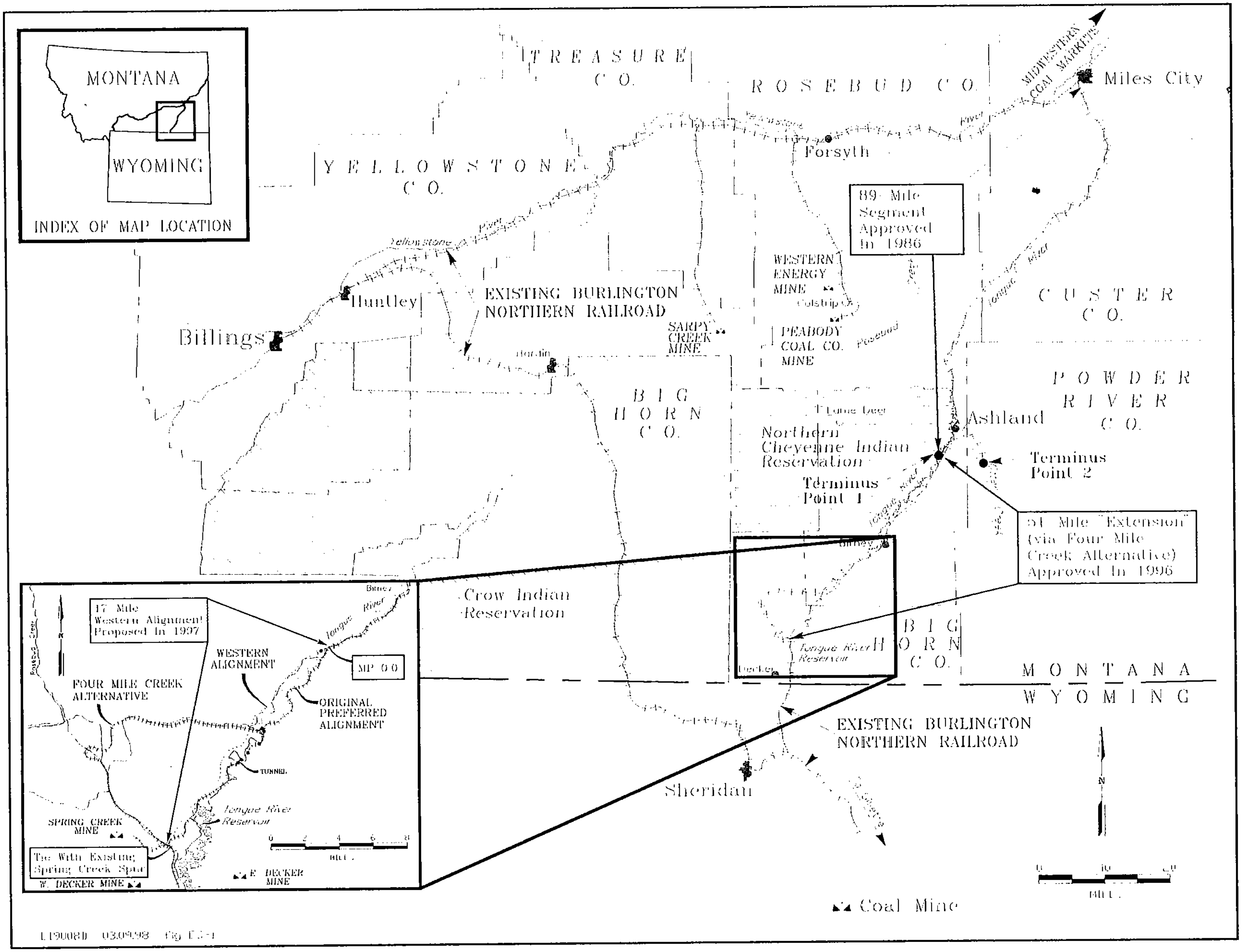


Figure ES-1. Location of the Tongue River Railroad

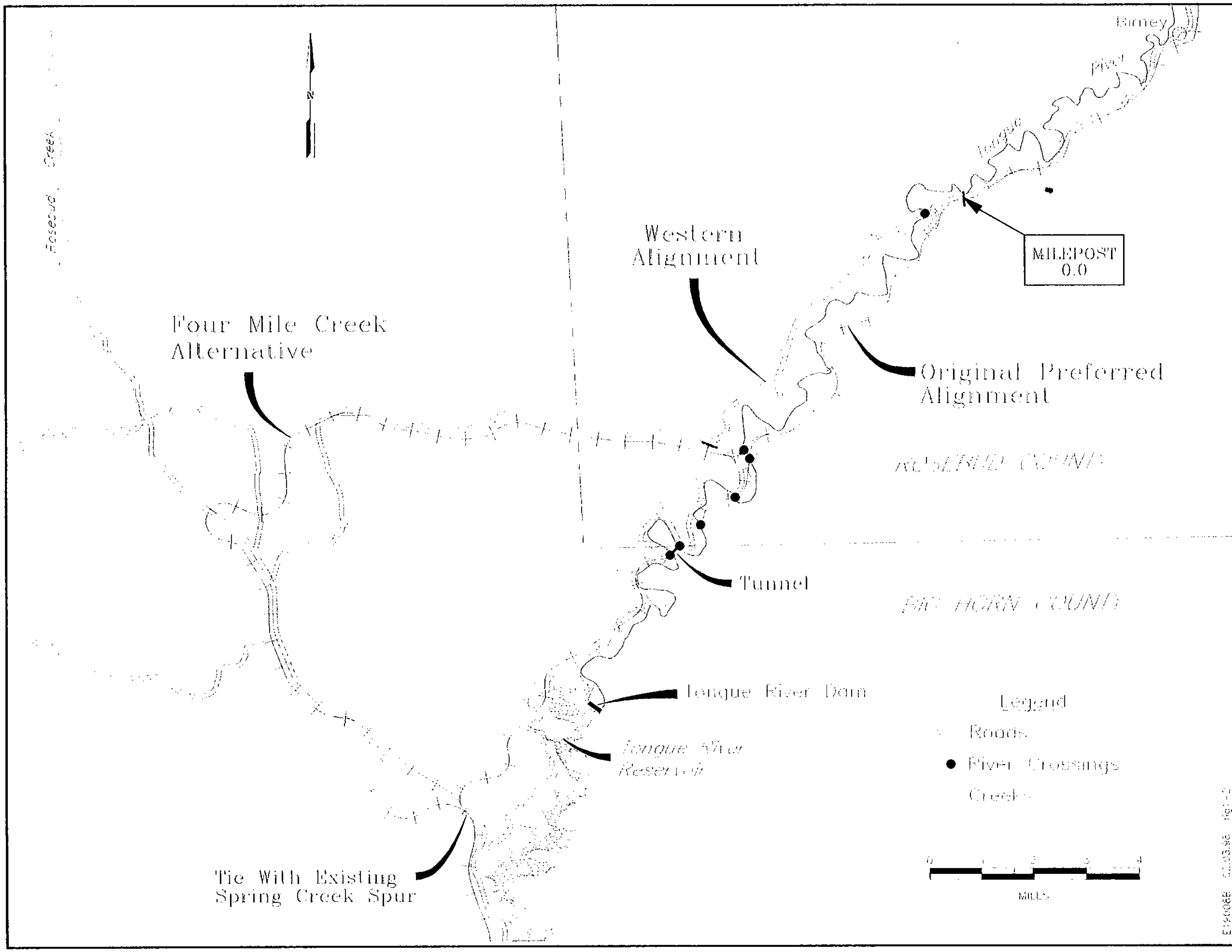


Figure ES-2. Alternative Routes for Southernmost Portion of Tongue River Railroad

Alternative. This route also involved an extra ten miles of track compared to the Original Preferred Alignment.

Following the Board's decision, TRRC, with assistance from BNSF, began an in-depth analysis of the Tongue River Railroad. TRRC's engineering contractor, together with BNSF engineering staff, worked to develop a new route that offered prospects of eliminating environmental concerns associated with both the Original Preferred Alignment and the Four Mile Creek Alternative as well as operational issues associated with the Four Mile Creek Alternative. After careful review of topographic maps, aerial photos, and site inspections from public roads and aerial reconnaissance, the engineers developed another route.

This new alternative route—called the Western Alignment—would avoid both the intrusion of the railroad in the Tongue River Valley (including the five bridges and tunnel) and the severe grades and longer distances of the Four Mile Creek Alternative. As shown in Figure ES-2, the Western Alignment lies west of the Tongue River Valley.

The Western Alignment

On December 19, 1997 the TRRC formally notified the STB of its intention to file an application for construction and operation of the Western Alignment. The TRRC proposes to construct the Western Alignment as the final 17 miles of the Tongue River Railroad Extension in lieu of building the Four Mile Creek Alternative. This Environmental Report (ER) has been developed as part of TRRC's application and in accordance with STB regulations and the National Environmental Policy Act of 1969 (NEPA).

The entire 120-mile corridor between Miles City and Decker has been the subject of previous EISs (two drafts, a supplemental draft, and two finals). A draft and final EIS were prepared in 1983 and 1985, respectively, for the line between Miles City and Ashland. The EIS documents were prepared for the Ashland to Decker extension in 1992, 1994, and 1996; the information and analysis from the 1983 and 1985 EISs were updated, where necessary, in the draft and final EISs from the 1990s. For this reason and because an extensive NEPA review for the section of rail north of the Western Alignment already has been completed, this ER focuses on the immediate vicinity of the Western Alignment and its alternatives: the already approved Four Mile Creek Alternative and the Original Preferred Alignment.

Comparison of Alternative Routes

Table ES-1 compares the three routes with respect to many of the environmental, safety, social and economic parameters that can be quantified. Note that some of the data are for the entire Tongue River Railroad (which are identified by the footnote "b") while some parameters are confined to the final 17 miles of the rail line (which are identified by the footnote "a"). The reason why some of the data are provided for the entire line is that it was not possible to break out the data dealing with the southernmost section. Also, in some cases, such as social and economic data, the breakout would not be relevant because effects are not confined to the immediate vicinity. These parameters are discussed briefly below by environmental impact category.

Length

The Western Alignment is 17.3 miles long following its departure from the Original Preferred Alignment and the Four Mile Creek Alternative (Milepost 0.0 in Figure ES-2). The Four Mile Creek Alternative is 29.4 miles while the Original Preferred Alignment is 18.7 miles. The Western Alignment is the shortest of the three routes.

Land Use

The Western Alignment would require acquisition of 468 acres (97 percent of which is rangeland with the remainder farmland) belonging to 13 separate landowners. The Four Mile Creek Alternative would require acquisition of 636 acres (94 percent of which is rangeland with the remainder farmland) belonging to 15 landowners. Although it is 1.4 miles longer, the Original Preferred Alignment would require slightly less right of way (447 acres) because the Western Alignment involves more cuts and fills and therefore more right-of-way (ROW) width in places. The Original Preferred Alignment would entail acquiring some of the Tongue River Reservoir State Park and one recreational residence (second home) and would affect 16 landowners. From a land use perspective, the Western Alignment results in fewer impacts than the other two routes.

Social and Economic

Because the Western Alignment would be the more costly to construct, it would create more construction employment, employment wages and long term tax benefits to the State and to local governments and schools than would the Four Mile Creek Alternative. However, construction of the Four Mile Creek Alternative would result in more locally purchased equipment and supplies than would the Western Alignment because proportionately more locally available materials such as fencing, are required by the Four Mile Creek Alternative.

Table ES-1. Comparative Summary Impacts Table

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Land Use			
Irrigated farmland in use (a)	3.2	2	2.7
Irrigated farmland not in use (a)	3.8	2	2.3
Non-irrigated farmland (a)	4.9	33.6	0
Recreational property (a)	0	0	31
Other range land (a)	456	599	411
Total ROW acquisition (a)	468	636	447
Total number of landowners affected (a)	13	15	16
Social and Economic			
Construction labor employment (b)			
Peak requirements	530	466	530
Direct plus indirect employment	716	629	716
Annual direct construction wages (b)	\$27.1 M	\$23.8 M	\$27.1 M
Construction expenditures locally (a)	\$17.7 M	\$23.8 M	\$22.9 M
Increase in regional population as a result of construction (excludes those living in construction camps) (b)	100	92	100
Railroad operations direct employment changes in region (initial year): (c)			
Gains from TRRC hiring	80	91	80
Losses from BNSF crews	87	87	87
Net gain/loss in jobs	-7	+4	-7
Railroad operations direct wage changes in region (initial year): (c)			
Gains from TRRC hiring	\$3.2 M	\$3.7 M	\$3.2 M
Losses from BNSF crews	\$7.5 M	\$7.5 M	\$7.5 M
Net loss in regional wages	\$4.3 M	\$3.8 M	\$4.3 M
Increase in Taxable Value (government and schools) (d)			
State of Montana (b)	\$19.9 M	--	--
Rosebud County (b)	\$ 10.9 M	--	--
Custer County (b)	\$ 7.8 M	--	--
Big Horn County (b)	\$ 1.2 M	--	--
Transportation			
Number of public rail/roadway crossings (a)	4	6	5
Number of private rail/roadway crossings (a)	12	18	15
Vehicle delays due to TRRC trains, 2005			
Number of delayed trips per day S566/S314 (a)	2/25	2/25	2/25
Percentage of trips delayed (%) S566/S314 (a)	< 2/4.5	< 2/4.5	< 2/4.5

Table ES-1. Comparative Summary Impacts Table (continued)

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Safety			
TRRC trains (year 2005)			
Total grade-crossing accidents per year (a)	< 1	< 1	< 1
Total derailments per year (a)	0.27	0.46	0.29
Energy			
Annual fuel consumption (gallons) for locomotives (b)	4.67 million	7.15 million	4.71 million
Tongue River Dam			
Nearest location to rail line (miles) (a)	1	2	1
Soils and Geology			
Earthwork volumes (cu yds) (a)	17.3 million	10.4 million	7.8 million
Disturbed acres (a)	364	456	334
Ave. slope length (a)	103	71	85
Erosion (tons/yr) (a) (f)	12,750	11,278	9,583
Hydrology and Water Quality			
Possible wetland impact locations (a) (e)	2	4	8
Water usage during construction (a)	1,328 acre feet	597 acre feet	795 acre feet
Average annual increase in TSS (mg/L) (a) (f)	11	6	9
Aquatic Ecology			
Number of non-perennial stream crossings	42	40	37
Number of perennial stream crossings	0	0	0
Number of river crossings	1	1	5
Terrestrial Ecology			
Vegetation and wildlife habitat lost due to the right-of-way (acres)	364	456	334
Air Quality (emissions in tons per mile per year)			
Short-term fugitive dust emissions from construction activities (a) (f)	5.01	3.70	4.26
Short-term construction combustion emissions (a)			
Carbon monoxide	4.23	1.49	1.76
Oxides of nitrogen	12.94	4.56	5.37
PM_{10}	1.37	0.48	0.57
Sulfur dioxide	1.56	0.55	0.65
Volatile organic compounds	0.95	0.33	0.39

Table ES-1. Comparative Summary Impacts Table (continued)

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Long-term locomotive combustion emissions (b) (g)			
Carbon monoxide	1.37	2.10	1.38
Oxides of nitrogen	13.9	21.3	14.0
PM_{10}	0.34	0.53	0.35
Sulfur dioxide	0.73	1.12	0.74
Volatile organic compounds	0.51	0.79	0.52
ROW - Fugitive dust (a) (f)	1.03	0.82	0.91
Noise			
Sensitive receptors (a)			
500-foot construction contour	1	7	3
2,000-foot construction contour	6	7	7
70-dBA contour	0	0	0
65-dBA contour	0	0	1
55-dBA contour	7	12	9
Cultural Resources			
Known sites within 100 feet of the centerline (a)	1	1	3
Known sites within 1,500 feet of centerline (a)	10	8	24

Notes:

(a) Data apply to southernmost portion of Tongue River Railroad (Proposed Action and alternative routes) only, not the entire Decker-to-Miles City line.

(b) Data apply to entire Tongue River Railroad (Decker-to-Miles City).

(c) TRRC estimates that 80 full-time employees would be hired in the initial year of operations for the Western Alignment. The loss of 87 BNSF crew member jobs is based upon TRRC operations. If TRRC and BNSF reach an operating agreement, the loss of BNSF crew would likely be much less. Wages are assumed to be $86,000 per year for each BNSF crew member including benefits. Total TRRC wages and fringe benefits are $3.2 million in the initial year of operations via the Western Alignment (Leilich, 1998).

(d) Based on capital construction costs for the entire TRRC rail line from Miles City to the Decker Area of $295 million via the Western Alignment; $286.7 million via the Four Mile Creek Alternative, and $279.2 million via the Original Preferred Alignment.

(e) Possible wetland impact locations include wetlands and "waters of the U.S." regulated by Section 404 of the U.S. Clean Water Act.

(f) Before mitigation (i.e., worst case).

(g) Data are in tons per mile per year and apply to the entire Tongue River Railroad (Decker to Miles City) which is conservatively estimated at 100 miles.

The Western Alignment would create a peak construction labor demand of 530 persons (for the entire Tongue River Railroad) compared to 466 for the Four Mile Creek Alternative, and 530 for the Original Preferred Alignment. Counting indirect employment, the total peak employment gains would be 716 for the Western Alignment and 629 for the Four Mile Creek Alternative. Labor requirements for the greater amount of earth work for the Western Alignment more than offsets the labor requirements associated with the longer Four Mile Creek Alternative. The Original Preferred Alignment has a peak labor requirement similar to the Western Alignment because of labor demands associated with the four additional bridges and the tunnel. For all routes, approximately 50 percent of this employment is estimated to be available from the five-county region (and Billings) with the remainder coming in from out of the region.

Most workers who do not commute to work from their homes will live in one of two construction centers rather than local communities and, therefore, the maximum anticipated increase in the population of the local communities from construction ranges from 92 (Four Mile Creek Alternative) to 100 (Western Alignment and Original Preferred Alignment). Because so few workers and their families would be locating in the region, no adverse impacts to local schools, hospitals, housing availability, and other services and infrastructure is expected as a result of any of the routes selected.

Direct employment from operation of the Tongue River Railroad over the Western Alignment in the initial year of operation would result in the estimated loss of 87 BNSF crew member jobs because of the savings in time and distance afforded by the Tongue River Railroad. (If BNSF were to use its own locomotives and crews to operate over the Tongue River Railroad, the BNSF crew member losses would be less.) Offsetting these losses would be the estimated 80 new railroad jobs created by the hiring of fulltime TRRC employees in the region.

The net regional loss of seven fulltime railroad jobs would result in a loss of approximately $4.3 million in direct wages. Regional population losses are estimated at 31, which is less than two-tenths of one percent of the existing regional population. These net wage and population losses do not take into account the significant increases in job opportunities and regional wages which would result from the development of Ashland area mines. These mines are not likely to be developed in the absence of the Tongue River Railroad.

Because the Four Mile Creek Alternative requires an extra helper locomotive and additional crew members because of the longer transit time, the number of crew members that would be hired by the TRRC would be approximately eleven more than under the Western Alignment or the Original Preferred Alignment in the initial year of operation.

By way of the Western Alignment, the Tongue River Railroad would generate increased property tax valuations of $19.9 million for the State of Montana, as well as increased property tax valuations that will benefit government operations and schools in three counties in particular. Property tax valuations in Rosebud County would increase by about $11 million, Custer County by about $7.8 million, and Big Horn County by about $1.2 million.

Transportation

The Western Alignment would affect the fewest number of road crossings and would result in the fewest number of delayed trips for local motorists. The Western Alignment would cross four public and 12 private roads compared to six and 18 for the Four Mile Creek Alternative and five and 15 for the Original Preferred Alignment. In the year 2005, when it is expected that there will be six roundtrip coal trains per day traveling across the southern portion of the Tongue River Railroad, fewer than 4.5 percent of the motor vehicle trips in the vicinity of the rail line would be delayed for any route.

Safety

The predicted frequency of either grade crossing accidents or derailments is less than one per two years on any route. The likelihood of a derailment is lowest on the Western Alignment and highest on the Four Mile Creek Alternative. Moreover, because of its steep grades, the magnitude of a derailment on the Four Mile Creek Alternative would probably be greater. Although the Tongue River Railroad will be a common carrier, little or no transportation of hazardous materials is expected because the transport of coal is anticipated to account for virtually all of the railroad's shipments.

Energy

Because of the need for more locomotives to accommodate its steeper grades, the diesel fuel consumption of train operations over the Four Mile Creek Alternative is highest among the three routes. The Western Alignment has the least fuel consumption of any route.

Tongue River Dam

The Four Mile Creek Alternative is farther away from the newly reconstructed Tongue River Dam than the other two routes. Nevertheless, construction and operation of all three routes would not affect the integrity of the structure given the agreed upon precautions related to blasting addressed in the mitigation section of this ER and the fact that the dam reconstruction project will be almost complete before the construction of the Western Alignment or its alternatives would begin.

Soils and Geology

The Western Alignment would result in significantly more earthwork as a result of several large cuts and fills to accommodate the alignment as it cuts through ridges and across drainages flowing east into the Tongue River. Its construction would require 17.3 million cubic yards of cut and fill material compared to 10.4 million cubic yards for the Four Mile Creek Alternative, and 7.8 million cubic yards for the Original Preferred Alignment. However, in terms of the number of acres disturbed, the Four Mile Creek Alternative results in 92 additional disturbed acres as compared to the Western Alignment and 122 additional disturbed acres as compared to the Original Preferred Alignment.

As a result, the Western Alignment is predicted to result in only slightly more soil erosion than the Four Mile Creek Alternative. Assuming no erosion control measures, the soil loss from the Western Alignment would be 12,750 tons per year (tpy) compared to 11,278 tpy for the Four Mile Creek Alternative, and 9,583 tpy for the Original Preferred Alignment. Erosion control measures would significantly reduce soil loss as discussed in Chapter Six of this ER.

Hydrology and Water Quality

An initial investigation of potential wetland sites reveals that the Western Alignment could affect two areas compared to four for the Four Mile Creek Alternative, and eight for the Original Preferred Alignment.

Because of its greater earthwork and thus the need for dust suppression and compaction, the Western Alignment would require more than twice as much water withdrawal from the Tongue River during construction as would the Four Mile Creek Alternative (1328 acre feet compared to 597 acre feet for the Four Mile Creek Alternative and 795 acre feet for the Original Preferred Alignment).

Due to its greater potential for erosion, the Western Alignment could produce higher total suspended solids (TSS) in the Tongue River. If there were no erosion controls in place (i.e., worst case, conservative assessment), there could be an annual increase in sedimentation in the

Tongue River of 11 milligrams per cubic meter compared to six for the Four Mile Creek Alternative and nine for the Original Preferred Alignment. However, the rate of soil erosion, and subsequent increases in TSS, would be diminished significantly through implementation of a variety of mitigation measures (see Chapter Six). These include:

- Spreading of topsoil and reseeding of native grasses in areas that will support vegetation,
- Construction of silt fences, slope drains, run-on diversion controls, ditch sediment traps, runoff interception ditches, rock check dams, and other best management practices.

Aquatic Ecology

The Western Alignment would cross 42 non-perennial stream beds compared to 40 for the Four Mile Creek Alternative and 37 for the Original Preferred Alignment. More importantly, the Western Alignment avoids the five river crossings and one tunnel section which made the Original Preferred Alignment particularly controversial in the earlier NEPA reviews. Both the Western Alignment and the Four Mile Creek Alternative would require only a single crossing of the Tongue River.

Terrestrial Ecology

The Western Alignment would affect 364 acres of wildlife habitat compared to 456 for the Four Mile Creek Alternative and 334 for the Original Preferred Alignment. Of particular concern in earlier NEPA reviews was the possible effect of the Original Preferred Alignment on the one known eagle nest. The Original Preferred Alignment would run 1000 ft to the west of the nest; the Western Alignment would run 4000 ft to the west, thus reducing significantly any potential for disturbance. The Four Mile Creek Alternative is so far from the known eagle nest that it would not disturb the nest.

Air Quality

Because of its larger earth moving requirements, the Western Alignment would have greater construction related emissions than would the other two routes. However, these emissions would be short term and would occur only during construction. The Western Alignment would have the least amount of long term emissions associated with the operation of locomotives. Fugitive emissions from windblown dust would be greatest along the Four Mile Creek Alternative because of its greater quantity of disturbed surfaces. For these reasons, the Western Alignment would have the least overall air quality impact of the three routes.

Noise

While none of the three routes would create significant adverse noise impacts (i.e., greater than 75 L_{dn} sound levels), the Western Alignment would affect the fewest sensitive receptors (7) while the Four Mile Creek Alignment would affect the most (12). All routes would raise noise levels well above existing levels during the short period of train passage.

Visual Resources

The Four Mile Creek Alternative would be the most visible from public roads; the Western Alignment would be the least visible because it would be set back from public roads. The high fill embankment areas of the Western Alignment would be visible at times to travelers along the county road paralleling the Tongue River mainly when looking directly up some of these drainages leading east into the Tongue River. At the Tongue River Reservoir State Park camp grounds, the Western Alignment would probably not be visible to park visitors looking to the west because it would be located in cuts and would be further west than the Original Preferred Alignment.

Native Americans

The Western Alignment and its alternative routes would not directly affect either the Northern Cheyenne Indian Reservation or the Crow Indian Reservation. Concerns raised in the past by the members of the Northern Cheyenne Indian Tribe, in particular, relate to the effects of the entire railroad and the opening up of coal mines in the Ashland area which would likely occur as a result of construction of the railroad. Although this development would provide jobs and economic opportunities for members of both tribes, some tribal members believe that this will hasten the decline of traditions and Native American cultures. Some tribal authorities are also concerned that the rail construction and associated mine development could disturb cultural and archeological sites. Finally, some believe that disturbance of ancestral tribal lands (not on the Reservation) has spiritual implications that could affect current tribal members. These issues were thoroughly addressed in the earlier EISs relating to TRRC.

Cultural Resources

The Western Alignment has one known historic or archeological site in the average ROW (within 100 feet of the centerline) compared to one for the Four Mile Creek Alternative and three for the Original Preferred Alignment. Of less significance (because of its greater distance) is the fact that within 1500 ft of the center of the ROW, each of the routes contains several more known sites: 10 for the Western Alignment, eight for the Four Mile Creek Alternative, and 24 for the Original Preferred Alignment.

No Build Alternative

As required by the STB regulations implementing NEPA, the applicant must describe the "no-build alternative". In this instance, the no-build alternative could be two different scenarios.

First, a no-build alternative could be the failure to construct the Tongue River Railroad at all. This would occur if TRRC chose not use its existing STB authorization to construct the Miles City-to-Decker rail line. As stated in the EIS for the Tongue River Extension, this no-build alternative would preserve the status quo and would be environmentally neutral. None of the environmental impacts discussed in this ER (including social and economic benefits) would occur. The present movement of coal from the Decker area would be unaffected and would continue to be transported along the existing, more circuitous BNSF line which now serves the Powder River Basin.

Second, a no-build alternative to the Western Alignment could be construction of the already STB-approved Miles City-to-Decker rail line via the Four Mile Creek Alternative. As described throughout this ER, this no-build would result in greater environmental impacts as well as increased operational risks compared to the Western Alignment.

Related Actions

Related actions are projects or activities that would not occur in the absence of the proposed action but are not directly linked to the proposed action. The effects associated with related actions are called indirect impacts. The principal related action associated with the *entire* Tongue River Railroad is the increased potential for opening up one or more surface coal mines in the Ashland area. These effects have been evaluated in the 1985 TRRC EIS for the 89-mile segment of the Tongue River Railroad connecting Ashland with Miles City.

Opening the Ashland area mines is not a related action for the construction and operation of the Western Alignment. This is because the TRRC is already authorized to construct and operate the Tongue River Railroad from Miles City to Ashland and beyond. Thus, there are no major related actions associated with the Proposed Action.

Chapter One

1.0 Introduction

The Tongue River Railroad Company (TRRC) has prepared this Environmental Report (ER) as part of its application to the U.S. Surface Transportation Board (STB). The application seeks STB authorization under 49 USC Sec. 10901 to construct and operate an approximately 17-mile section of railroad known as the "Western Alignment" in Rosebud and Big Horn Counties, Montana. The Western Alignment would be constructed as the final 17 miles of the Tongue River Railroad Extension in lieu of the Four Mile Creek Alternative approved by the STB on November 8, 1996 in Finance Docket No. 30186 (Sub-No. 2).

1.1 Background

The proposed Tongue River Railroad is composed of two line segments. An initial 89 miles was approved in 1986 by the former Interstate Commerce Commission (ICC), the predecessor to the STB.[1] As shown in Figure 1-1, the initial line segment of the Tongue River Railroad runs from Miles City, Montana to two terminus points near Ashland, Montana. The Miles City to Ashland segment is not yet constructed. In 1991, the TRRC applied to the ICC for an extension to this first segment. When constructed, "the Extension" would connect Terminus Point 1 of the first segment with the existing Spring Creek Mine rail spur near Decker, Montana. This rail spur, in turn, provides access to the Burlington Northern Santa Fe (BNSF) rail line.

In its 1991 application for the Ashland to Decker Extension, TRRC submitted an original preferred route, which generally paralleled the Tongue River Valley passing west of the Tongue River Reservoir. As part of the National Environmental Policy Act (NEPA) compliance procedure, the ICC's Section of Environmental Analysis (SEA) asked the TRRC to consider alternative routes. In response, the TRRC submitted the Four Mile Creek Alternative, despite preliminary operating feasibility analyses indicating that the Four Mile Creek Alternative would have substantially higher operating and maintenance costs and raise safety issues because of steep grades. The Four Mile Creek Alternative departs from TRRC's Original Preferred Alignment at the mouth of Four Mile Creek—approximately 28 miles south of Terminus Point 1.

[1]To avoid confusion, from this point forward this ER refers to the ICC as the STB except in titles of publications, formal notices, etc.

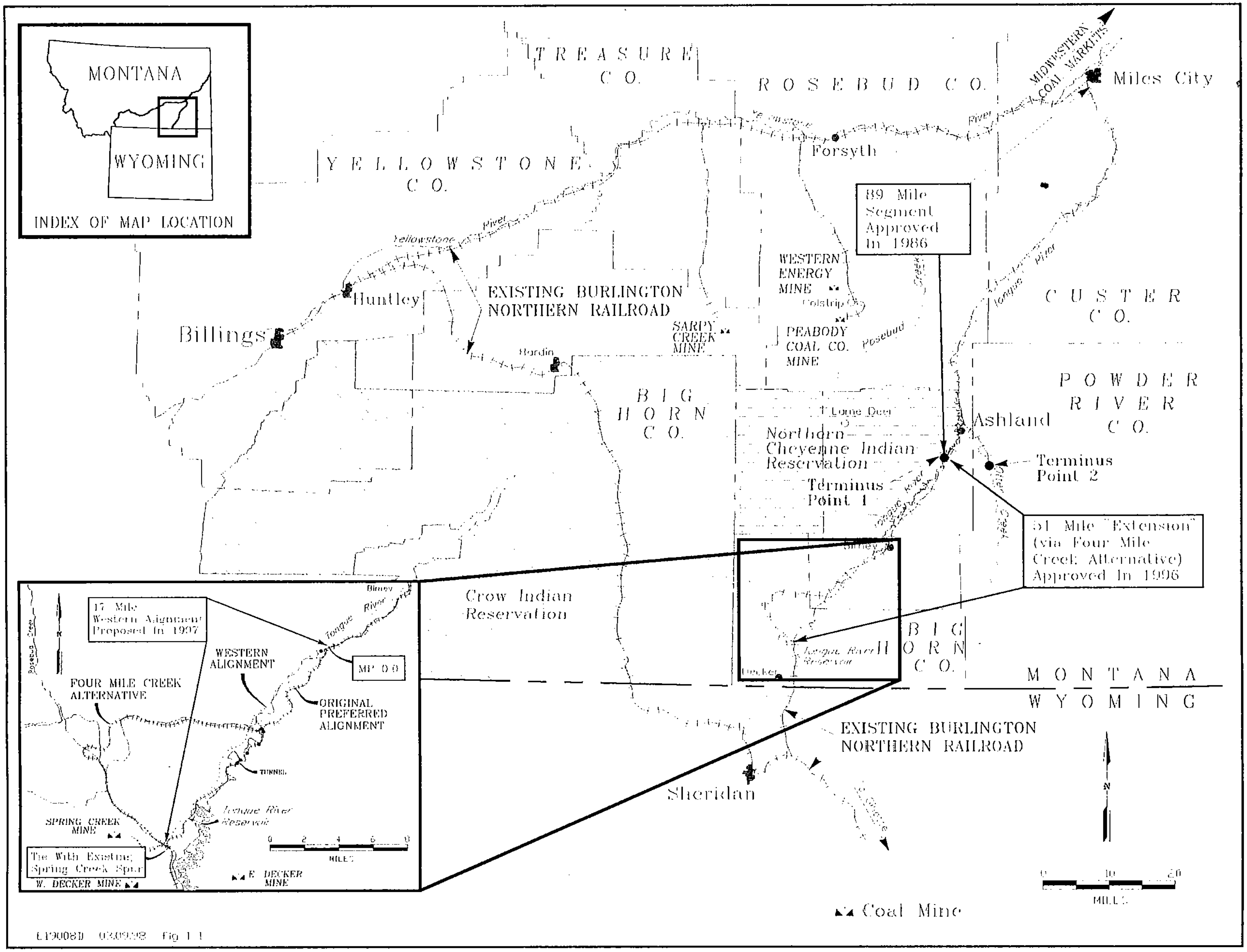


Figure 1-1. Location of the Tongue River Railroad

SEA's Draft Environmental Impact Statement (DEIS) of July 17, 1992 preliminarily concluded that the Four Mile Creek Alternative would be environmentally preferable to TRRC's Original Preferred Alignment. TRRC responded to the SEA's conclusion in the DEIS by submitting material in support of TRRC's position that the Four Mile Creek Alternative posed both economic and environmental disadvantages relative to the Original Preferred Alignment. TRRC also submitted additional mitigation measures developed in conjunction with state agencies to further reduce impacts to the 10 miles of the Tongue River Canyon below the Tongue River Reservoir dam. Based on these submissions, SEA released a Supplement to the DEIS in March 1994 which recommended TRRC's Original Preferred Alignment.

However, in its Final Environmental Impact Statement (FEIS) released in April 1996, the SEA once again recommended the Four Mile Creek Alignment because of commentor concerns about the Original Preferred Alignment impacts to the upper Tongue River Canyon below the Reservoir. Accordingly, in November 1996 the STB rendered its decision to approve the TRRC application for the Ashland to Decker Extension provided that the final portion of the route follow the Four Mile Creek Alternative.

Following the Board's decision, the TRRC reexamined the feasibility of the Four Mile Creek Alternative, conducted additional engineering studies and consulted with BNSF officials. The BNSF is one of the principal transporters of coal mined in the Powder River Basin. BNSF is considering use of the Tongue River Railroad to access Upper Midwest utility markets and access new sources of compliance coal along the alignment through an agreement with the TRRC that would permit BNSF to operate over the TRRC line.

BNSF officials and TRRC's engineering firm, Mission Engineering, both expressed concerns regarding operation on the Four Mile Creek Alternative. After careful review of topographic maps, aerial photos, site inspections from public roads, and aerial reconnaissance, the Mission/BNSF team proposed a new alternative that, while more costly than the TRRC's Original Preferred Alignment, is believed to be far superior to the Four Mile Creek Alignment in other aspects and have fewer adverse environmental impacts. This third new route is called the Western Alignment.

On December 19, 1997, the TRRC formally notified the STB of its intention to file an application for construction and operation of the Western Alignment. Because the northern 21 miles of the Extension and the 89 miles of the first segment have already been subjected to extensive environmental review and have been approved for construction, the focus of this ER is on the approximately 17 miles of the Western Alignment.[2] This ER is prepared pursuant to the STB's NEPA regulations at 49 CFR 1105.

For purposes of these new NEPA environmental reviews, the construction and operation of the Western Alignment will be the Proposed Action under NEPA. (In this ER, the Western Alignment is often used interchangeably with the phrase, the Proposed Action.) The other route alternatives to be considered in this ER include the approved Four Mile Creek Alternative and TRRC's 1991 Preferred Alignment, which is now called the Original Preferred Alignment. Figure 1-2 shows these three route alternatives from the point at which they diverge south of Birney to the Spring Creek Mine spur, the end point for all three routes.

1.2 Purpose and Need for Action

This section describes the overall purpose of the Tongue River Railroad, the specific purpose of the Proposed Action, and the need for the Proposed Action.

1.2.1 Purpose of the Proposed Action

The overall purpose of the Tongue River Railroad is to provide for the transport of coal from existing and future mines. As discussed above, the TRRC has already received approval from the STB for both segments connecting the Spring Creek Mine rail spur to Miles City. However, the TRRC seeks to reduce the higher operating and maintenance costs, environmental impacts, and safety concerns associated with the southernmost portion of the approved line (i.e., Four Mile Creek Alternative). Thus, the purpose of the Proposed Action, construction and operation of the Western Alignment, would be to provide an environmentally superior, safer, and a more cost-effective alternative to the Four Mile Creek Alternative.

The economic and operational advantages of the Proposed Action compared to the Four Mile Creek Alternative are summarized in Table 1-1. These calculations do not include the

---

[2]This ER frequently draws upon (i.e., summarizes, expands upon, and updates) information and analyses contained in the three previous NEPA documents associated with the Ashland-to-Decker "Extension." These are the DEIS (ICC, 1992), the Supplemental DEIS (ICC, 1994), and the FEIS (STB, 1996a). It may appear that there are inconsistencies between the three previous NEPA documents and this ER. In fact, the differences are largely the result of updates (e.g., population data) and/or the focus on the 17-mile segment rather than the full Extension. Unless otherwise indicated, the data and analyses in this ER focus on the 17-mile Western Alignment and its two alternative routes rather than on the entire Extension.

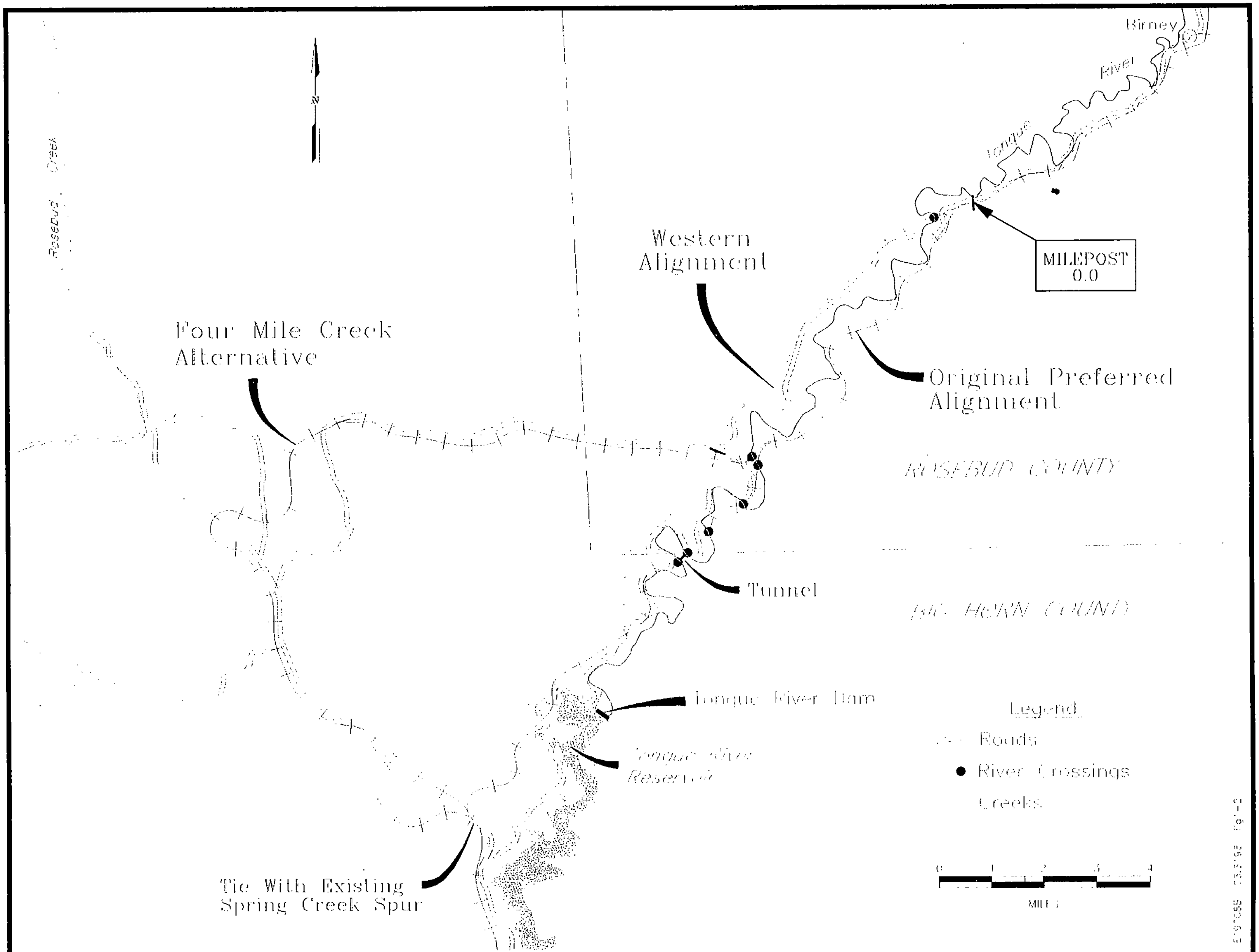


Figure 1-2. Alternative Routes for Southernmost Portion of Tongue River Railroad

Table 1-1. Selected Construction and Operational Factors and Cost Comparisons of Proposed Western Alignment and the Approved Four Mile Creek Alternative

	Western Alignment	Four Mile Creek Alternative
Distance (Milepost 0.0 to end)	17.3 miles	29.4 miles
Climb for loaded trains[2]	64 feet	694 feet
Maximum climbing grades for loaded trains[2]	0.45%	1.53%
Maximum descending grades for loaded trains[1]	0.93%	2.31%
Number of public road crossings	4	6
Right-of-way required	468 acres	636 acres
Construction costs[1]	$92.6 million	$84.3 million

Source: [1] Hadley, 1998
[2] TRRC, 1998

additional labor costs and wear and tear on coal cars and locomotives incurred by the Four Mile Creek Alternative.

As shown above, the approved Four Mile Creek Alternative is 1.7 times as long as the proposed Western Alignment. It results in a climb against loads that is ten times higher than the Western Alignment; has grades that are three times as steep for ascending loaded trains and more than twice as steep for descending loaded trains; crosses more public roads; and requires 36 percent more right-of-way (ROW) to be purchased. Each of these variables translates into either construction or operational cost impacts. The construction costs for the Western Alignment are approximately 10 percent greater than estimated for the Four Mile Creek Alternative. However, these higher costs are more than offset by the much higher operational costs for Four Mile Creek Alternative. The severe grades incurred by the Four Mile Creek Alternative also result in more complicated operations to comply with safety requirements and higher long-term maintenance costs.

1.2.2 Need for the Proposed Action

The Proposed Action would provide a more efficient means of transporting coal from existing mines in the region and would enable development of proposed mines in the Ashland area to go forward. Table 1-2 below provides estimates of annual coal tonnage in Montana and

Wyoming that would be transported by the Tongue River Railroad in general and the Western Alignment specifically.

Table 1-2. Coal Tonnage Forecasts over Tongue River Railroad (millions of tons per year)

Year	Origin			Total Carried over TRRC	Total Carried over Western Alignment
	Wyoming Coal[1]	Decker Area Coal[1]	Ashland Area		
2000	5.0	18.4	0.0	23.4	23.4
2005	6.0	23.4	3.3	32.7	29.4
2010	6.0	8.4	20.5	34.9	14.4
2015	7.0	8.4	27.9	43.3	15.4

Source: Adapted from RDI, 1998.
[1]Coal from this origin will move over Western Alignment.

The U.S. Clean Air Act of 1990 has created a strong market for low sulfur coal (i.e., compliance coal) which can be burned in electric utility boilers without the need for costly flue gas desulfurization units. The Powder River Basin of Wyoming and Montana contains the great majority of the U.S. reserves of compliance coal. Table 1-2 shows that existing mines near Decker will yield less production as their reserves dwindle but this can be offset by new mine development in the Ashland area. Wyoming and Decker area coal also would use the Western Alignment during the first decades of the next century.

The three existing compliance coal mines in the Decker area (East and West Decker and Spring Creek) currently transport their production to Midwestern utilities by way of BNSF's line through Sheridan, Wyoming and Hardin and Forsyth, Montana (See Figure 1-1). The Tongue River Railroad would allow this coal to be shipped directly to Miles City thereby saving more than 320 miles on each roundtrip coal train to the Midwest. In addition to Decker area coal, BNSF currently transports some Wyoming coal over the circuitous Sheridan-to-Forsyth route to these upper Midwestern markets. This Wyoming coal is likely to move over the TRRC line as well. The quantity of Wyoming coal that would likely travel across the Western Alignment in the first decade of the next century is between five to seven million tons per year (McMahan, 1998).

The number of trains traveling across the Western Alignment can be calculated using a typical 13,200 ton per train coal load and the volumes of coal projected to be carried over the Western Alignment as indicated in Table 1-2. This table also assumes that Wyoming coal would be transported across the Western Alignment. A train "movement" is a one-way trip across the rail segment. Thus, each loaded coal train results in two train movements - the loaded trip north and the empty trip south. There will be an estimated 12 train movements per day, or six roundtrip coal trains across the Western Alignment in the year 2005. This is the peak year projection for the Western Alignment and is used as a benchmark for much of the analysis in this ER.

The Tongue River Railroad is essential to the development of the Ashland area mines which have no alternative means of economic transport without the railroad. Thus, the Tongue River Railroad is a critical element in the future of Montana coal production and the benefits that accrue to state and local governments from the tax revenues associated with this production. As described above, the Western Alignment is an environmentally superior, safer, and more cost-effective alternative to the Four Mile Creek Alignment. Benefits of the railroad to Montana are discussed below.

The Tongue River Railroad would directly yield tax benefits associated with its construction. The Montana Taxpayers Association (MTA, 1998) has estimated that projected property tax benefits associated with the Tongue River Railroad would include:

- New property tax revenue for the State of Montana;
- Annual university levy is $119,000;
- Annual school equalization levy is $1,900,000; and
- Direct increases in property tax values in Big Horn, Rosebud, and Custer counties and several elementary and high school districts amounting to millions of dollars annually.

In addition, construction of the entire Tongue River Railroad would create a peak demand for 530 workers with an estimated direct payroll of $27 million during the peak year of construction. To operate the railroad in its initial year of operation an estimated 80 employees would be hired with an annual payroll of $3.2 million. There would also be indirect benefits from this economic activity resulting in additional jobs and tax revenues from income and property taxes.

In summary, the Western Alternative is needed to make the already approved Tongue River Railroad a more cost-effective method of moving compliance coal to Midwestern utility markets. With the Western Alignment, the entire Tongue River Railroad is more operationally efficient. In turn, the Tongue River Railroad is needed to allow for the development of several new mines in the Ashland area which would provide for increased coal production in Montana. This coal will help utilities comply with Clean Air Act requirements, will create new job opportunities in Montana, and will generate hundreds of millions of dollars in additional tax revenues to state and local governments.

1.3 Overview of this ER

Following this introductory section, Chapter Two of this ER describes the physical environment (e.g., land, water, air), the biological environment, and the socio-cultural environment. Because of the special consideration accorded Native American lands under NEPA, a separate but brief discussion of the Northern Cheyenne and Crow Indian reservations is included. Because the scope of the Proposed Action is limited to the final 17 miles of the Ashland to Decker Extension, a description of the existing environment is generally confined to the immediate vicinity of the three alternative routes except where larger regional discussions are appropriate.[3] When the discussion refers to regional issues, this will be clearly indicated.

Chapter Three provides descriptions of the Western Alignment as well as the other two route alternatives. The description includes construction and operational activities. A summary of the environmental impacts of the Proposed Action compared to its alternative routes is presented in Chapter Three. As required by NEPA, the No-Action Alternative is also described in Chapter Three.

Chapter Four discusses in more detail the impacts of the Proposed Action and its alternatives. Impacts associated with construction and with operation are discussed for each of the topical areas identified in Chapter Two (e.g., land use, noise, terrestrial biology). Measures that can be taken to avoid, reduce, or compensate for these impacts are mentioned in Chapter Four and are more fully discussed in Chapter Six. Chapter Five summarizes the unavoidable adverse impacts associated with the Proposed Action. Chapter Seven discusses coordination and informal consultation with federal and state regulatory agencies related to the Western Alignment.

---

[3]For details on affected environment and impacts associated with the Tongue River Railroad north of the Western Alignment, the reader is referred to the draft (ICC, 1992), supplemental draft (ICC, 1994), and final EIS (STB, 1996a) for the Extension as well as the earlier NEPA document for Miles City to Ashland segment (ICC, 1983) and (ICC, 1985).

Chapter Two

CHAPTER TWO

2.0 Description of Existing Environment

The affected environment is identified and described in this chapter. The affected geographic area that is the focus of this Environmental Report (ER) is the area that may experience impacts from the construction and the operation of the Western Alignment or its alternative routes (Four Mile Creek Alternative and Original Preferred Alignment). The Proposed Action and its alternative routes are located in the southern tip of Rosebud County and in southeastern Big Horn County. Generally, the impacted area of the two counties is termed the "project area" in this ER. For detailed descriptions of the physical, cultural, and socioeconomic conditions for the entire Tongue River Railroad, the reader is referred to early NEPA documents relating to the initial segment (ICC, 1983 and ICC, 1985) and the Ashland to Decker "Extension" (ICC, 1992; ICC, 1994; and STB, 1996a).

2.1 Topography

The Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment are all located in the Tongue River Basin, a sub-drainage of the Yellowstone River Basin. Originating in the Big Horn Mountains in Wyoming, the Tongue River flows northward into Montana to its confluence with the Yellowstone River near Miles City. The Tongue River flows through foothills of the Big Horn Mountains and through plains descending to 2,350 feet in elevation near Miles City.

The Tongue River Valley is bordered by hills and porcellanite-capped buttes that rise 200 to 500 feet above the valley bottom. In addition to the Tongue River itself, the Tongue River Reservoir near the Montana-Wyoming border is a major water feature of the basin. Downstream from the reservoir are numerous drainages that are generally ephemeral in nature.

2.2 Land Use

Over 90 percent of the land use in Powder River, Custer, Rosebud, and Big Horn Counties is devoted to agriculture. About 90 percent of the agricultural land in the Tongue River Valley is used for cattle grazing; seven percent is used to raise crops; and less than three percent is irrigated cropland. The irrigated land is located along the Yellowstone and Tongue Rivers (ICC, 1992).

Although agriculture is the predominant land use in the proposed project area, industrial development in the form of mining and electric power generating plants is a significant land use in Rosebud and Big Horn Counties. In the Colstrip area of Rosebud County, the Big Sky and Rosebud Mines produce about 15 million tons of coal annually. Power plants at Colstrip, which are operated by the Montana Power Company, have a capacity of 2,000 megawatts. The operation of two coal mines at East and West Decker and the Spring Creek Mine dominate industrial activity in Big Horn County. In 1996, the Decker Mines produced nearly 11 million tons, while the Spring Creek Mine produced another 9.0 million tons (Montana Coal Council, 1997). As noted earlier, the coal produced from these Decker area mines would be hauled on the Tongue River Railroad to power plants in the Midwest.

Beyond agriculture and industrial use, land in the Tongue River Valley is enjoyed for its natural beauty and recreational offerings. Recreational land use in the proposed project area occurs at the Tongue River Reservoir State Park and in the subdivision development informally called Cormorant Estates. Sixteen tracts have been platted in the Cormorant Estates land parcel, which includes land on the east and west shores of the Tongue River Reservoir. Several residences and cabins have been constructed while other land parcels remain for sale. The Tongue River Reservoir State Park is administered by the Montana Department of Fish, Wildlife, and Parks. The area provides a diversity of outdoor activities including: camping, picnicking, boating, fishing, ice fishing, water skiing, and waterfowl hunting. Both Montana and Wyoming residents enjoy the recreational area on weekends.

Use of the Tongue River Reservoir State Park has steadily increased at an average of 15 percent annually since 1989 (MDNRC et al., 1996). Visitors typically arrive from origination points within a 100-mile radius of the reservoir. This would include Sheridan, Johnson, and Campbell Counties in Wyoming, and Yellowstone, Custer, Big Horn, Rosebud, Powder River, and Treasure Counties in Montana. The state park is one of only four state parks (Tongue River, Cooney, Hell Creek, Medicine Rocks) in Montana exclusively hosting rustic camping opportunities. The rustic nature of the park is defined by four key elements: 1) non-designated campsites, 2) minimal water supply—central pump, 3) central trash receptacles, and 4) occasional fire rings (MDNRC et al., 1996). Popular camping areas in the vicinity of the proposed project include Sand Point, Peewee Point, Campers Point, and Rattlesnake Point. (A map showing these camping sites is provided in Figure 4-5.)

Recreational potential for fishing, hunting, and floating also exists along the Tongue River. The segment of the river extending ten miles north of the Tongue River Reservoir and Dam, in particular, has recreational potential because of scenic canyons and wooded bottom lands. The lack of designated access points, however, limits recreational land use of the river. Big game and upland game-bird hunters in the Tongue River Reservoir area also experience access problems because the majority of lands are in private ownership.

2.3 Soils and Geology

Information regarding the soils and geology of the proposed project area has been derived from a variety of sources. Beginning with field work in 1982 and concluding with publication of maps and classifications in 1996, the USDA Natural Resources Conservation Service has published an extensive soil survey of Rosebud County and part of Big Horn County. Augmented with other published regional geologic and soils literature and limited field data (ESA, 1997), the soils and geology of the region from the Tongue River crossing south of Birney, Montana, southward to the termination of the line near Decker, Montana, is summarized here.

Flat-lying sediments of the Tongue River Member of the Fort Union Formation comprise the bedrock that will be crossed by the southern portion of the alignment. The Tongue River sediments originated as alluvial fan-delta, fluvial, or paludal (swamp) materials deposited on and interfingered with the lacustrine mudstones of the Lebo Shale. These sediments accumulated in a widespread, ancient depression now called the Powder River Basin.

Interlayered sandstone, siltstone, claystone (or shale), and coal make up the Tongue River Member. The depositional environment that created these rocks was a low energy, low relief area near or beneath lake level. Sandstones were deposited in alluvial/fluvial channels or levees; siltstones and claystones formed as overbank floodplain deposits; and coal formed from peat bogs in interchannel backswamps. Sediments in the vicinity of the proposed alignment were deposited in a fluvial-channel-dominated facies and contain several regionally extensive coal beds.

The Tongue River Member of the Fort Union Formation was deposited from several coalescing delta systems draining into the Powder River Basin. The majority of the filling originated to the east but secondary fill was provided from the northwest by the Decker Delta and from the southwest by the Dry Fork Delta.

The topography traversed by the Western Alignment and its alternative routes varies from flat valley floors to steep canyon walls. In general, the northern portion of the section, extending from the Tongue River crossing of the Western Alignment south to Dutch Hollow and the portion south of Leaf Rock Creek to the Decker terminus, crosses gently rolling terrain or areas with flat valley floors and low bluffs. The intervening area, however, is rugged and characterized by narrow canyons and ridges. Drainages crossed by the Western Alignment are generally east-draining and have ephemeral flow into the Tongue River, which flows northward.

The bedrock in the vicinity of the alignments has been divided into two units based on geologic and engineering properties: 1) rippable sediments, or thin bedded sandstone, siltstone, claystone, shale and coal units; and 2) sandstones probably requiring blasting, described as massive or thick bedded sandstones.

2.4 Hydrology and Water Quality

The Tongue River is one of four major interstate tributaries of the Yellowstone River. The headwaters of the Tongue River start in the Big Horn Mountains of Wyoming and flow in a northeasterly direction for approximately 300 miles to its confluence with the Yellowstone River at Miles City, Montana. The total drainage area is 5,379 square miles. The Tongue River Dam and Reservoir are approximately 10 miles downstream of the Montana-Wyoming state line. The reservoir is about eight miles long and one mile wide, with an average depth of 20 feet. The multi-purpose reservoir and dam provide water for irrigation, recreation opportunities, and flood protection. The Tongue River Dam was constructed between 1937 and 1940 and was administered by the Montana Water Conservation Board until 1972, when that responsibility was passed on to the Montana Department of Natural Resources and Conservation (MDNRC). The dam is currently under construction to repair damage from a May 1978 flood event. The flood approached the 100-year flood level with a peak inflow of approximately 17,000 cubic feet per second (cfs) which caused $1 million in erosion damage around the existing concrete spillway and threatened to breach the dam. The U.S. Army Corps of Engineers classified the dam as unsafe in 1980 because of its inadequate spillway capacity and the potential for loss of life should the dam fail (MDNRC et al., 1996).

The Northern Cheyenne-Montana Water Rights Compact, signed in 1991, requires Montana to deliver up to 20,000 acre feet per year (afy) of storage and exchange water to the Northern Cheyenne Tribe over and above the Tribe's existing water purchase contract for 7,500 afy. In cooperation with the Northern Cheyenne Tribe and the United States Bureau of

Reclamation (USBR), MDNRC began the process of repairing and improving the Tongue River Dam (McDonald and Yadon, 1998).

Once repairs are complete, the dam will include a 60,000 cfs over-the-top, stair-step emergency spillway, a 40,000 cfs labyrinth weir primary spillway, a new primary outlet tunnel, and an upgraded auxiliary outlet tunnel. The new two-spillway system will have the capacity to pass a flow of 100,000 cfs and withstand a 160,000 cfs top-of-dam flood. The new primary spillway will raise the height of the reservoir by four feet and increase its capacity from 67,000 to 80,000 acre-ft. An additional 400 acres is to be submerged, bringing the total impounded area to 3,612 acres (McDonald and Yadon, 1998). The dam is scheduled for completion in June 1999 (Sanders, 1998).

Flows in the Tongue River average 458 cfs above the dam, 442 cfs as gauged just below the dam, and 418 cfs at Miles City, Montana. The average annual discharge of the Tongue River just above the dam is 332,000 afy, below the dam is 321,000 afy, and at Miles City, Montana, is 303,000 afy. Flows at Miles City are less than dam releases during the May-to-September period when approximately 15,000 acres in the basin is irrigated. Flows from October to April are greater at Miles City than dam releases as a result of contributions from river tributaries and absence of irrigation withdrawals (MDNRC et al., 1996).

The major tributaries of the Tongue River are Hanging Woman, Otter, and Pumpkin creeks. Many ephemeral streams also drain into the Tongue River. These ephemeral streams flow mainly in response to precipitation runoff, and snowmelt. Major tributaries flow throughout the year but may flow intermittently within certain reaches during a dry season or a dry year.

Water quality in Tongue River meets federal and state standards for public and private water supplies, livestock use, and irrigation. Concentrations of sulfate and total dissolved solids (TDS) are the water quality parameters that are measured to determine the suitability of Tongue River water. Measuring the specific electrical conductance (SEC) of the water indicates the concentration of ionized minerals or dissolved solids in solution. Table 2-1 presents the surface water quality data provided in the Tongue River Basin EIS (MDNRC et al., 1996).

In contrast to its prairie-originated tributaries, the Tongue River has good surface water quality because of its reliance on mountain snowpack. The Tongue River Dam also contributes to

Table 2-1. Comparison of Surface Water Quality of Tongue River, Tongue River Dam, and Reservoir with Surface Water Quality Criteria

Water Quality Parameter	Upstream of Tongue River Dam	Tongue River Reservoir	Tongue River at Birney Day School	National Secondary Drinking Water Standards (human drinking water)[1]	Montana Bureau of Mines and Geology [2]
Sulfate (mg/L)	156	180	205	250	250* (drinking water) 1,500 (livestock)
TDS (mg/L)	410	440	490	500	500 (drinking water) 5,000 (livestock)
SEC (μmho/cm)	659	691	665	--	1,000 (drinking water)

[1] Contaminant level limits taken from U.S. Environmental Protection Agency (EPA) Drinking Water Regulations and Health Advisories, EPA 822-B-96-002, October 1996.
[2] Montana Bureau of Mines and Geology, [No date]. Emmissible Limits for Inorganic Constituents in Water. Form 196. Water Quality Parameters and Their Significance.
mg/L = milligrams per Liter
cm = centimeter
Main source is MDNRC et al., 1996, unless otherwise footnoted.

the high water quality of the Tongue River because it releases clear water downstream in place of the sediment-laden flow that characterizes prairie streams. Water quality rapidly decreases downstream from the reservoir, as the Tongue River receives flow from the prairie tributaries and return flow from irrigation users (ICC, 1992).

Total suspended sediment (TSS) data have been collected by the U.S. Geological Survey at two stations on the Tongue River below the Tongue River Dam. Those data are summarized in Table 2-2. Currently, there are no applicable state or federal regulatory standards for TSS available to compare with these levels. TSS concentrations are generally low below the dam, reflecting the sediment settling in the Tongue River Reservoir and subsequent clear discharge from the dam. Concentrations increase downstream at Miles City, reflecting additional sediment contribution from the intervening drainage area.

Table 2-2. Total Suspended Sediment Data for Tongue River

Station	Dates	No. Samples	TSS Concentrations, mg/L		
			Range	Mean	Median
06307500 at Tongue River Dam	10/85-9/95	85	4 - 213	29	23
06308500 at Miles City	10/85-9/94	37	18 - 5330	362	69

Source: Ladd, Patricia, email dated February 9, 1998, U.S. Geological Survey, Helena, MT.

Excluding alluvial aquifers and aquifers influenced by surface topography, groundwater flow in the Tongue River Reservoir area is to the northeast. In the Tongue River Reservoir area, three aquifer-bearing geological formations overlie the deeper impermeable shales of the Montana Group. From deep to shallow, they are: the Fox Hills, Tullock-Hell Creek (Fox Hills-Lower Hell Creek), and Tongue River members of the Fort Union Formation. The Upper Cretaceous Bearpaw Shale is considered a major confining unit within the group. In addition, alluvial sands and gravels serve as productive aquifers where they are thick and well-developed. Deep sandstones of the Lakota Formation, carbonate rocks of the Madison Group, and dolomite of the Red River Formation provide potential but little-used groundwater resources. The Fox Hills Formation can yield up to 200 gallons per minute (gpm) to a well. The Tullock-Hell Creek aquifer can yield up to 85 gpm, and the hydrogeologic units of the Tongue River Member produce up to 50 gpm (MDNRC et al., 1996).

Groundwater from the Fox Hills Formation contains TDS in the range of 200 to 2,300 mg/L and the Tullock-Hell Creek Aquifer averages TDS concentrations of 1,000 mg/L.

The hydrogeologic units of the Tongue River member contain TDS concentrations in the range of 200-3000 mg/L. Quaternary age alluvial aquifers along the Tongue River and its tributaries can yield up to 700 gpm, with TDS between 280 and 5,600 mg/L (MDNRC et al., 1996).

According to the Tongue River Basin EIS, there is incomplete information about the three deep aquifers below the Bearpaw Shale. The Lakota Sandstone is estimated to be 200 ft thick, but no data are available on yields or water quality. Artesian flows were encountered in the aquifer during oil exploration drilling, and a TDS concentration for the Lakota Sandstone was observed at 2,000 mg/L during the drilling of a U.S. Geological Survey test well. The Madison Group and Red River Formation were encountered during test well drilling. While yields are available, production in excess of 1,000 gpm can be expected from the Madison Group with TDS concentrations of 1,000 to 1,500 mg/L and temperatures in the range of 176 to 212°F. Conclusions with respect to the Red River Formation are few. Yields are expected to be variable, and concentrations of TDS are expected to be high (MDNRC et al., 1996).

2.5 Terrestrial Ecology

2.5.1 Vegetation

The vegetation found in the project area is typical of the Northern Great Plains. Adapted to extremes of winter cold and summer drought, the plant species form the mixed prairie and tallgrass prairie vegetation communities. The principal grass species are mid-grasses (e.g., wheatgrasses) with some shortgrasses (e.g., needlegrasses) (ICC, 1983). Rocky Mountain flora and Great Basin flora species also are represented.

The types of vegetation vary with the topography: upland areas and high terraces contain shrubland and grassland, interspersed with coniferous forest, while drainages and bottomlands contain deciduous trees and shrubs. Ten general vegetation types are located in the project area:

(1) The most common vegetation type in the area is big sagebrush/grassland. Big sagebrush is the dominant shrub, with western wheatgrass, bluebunch wheatgrass, needle-and-thread, and green needlegrass being the codominants. This type generally occurs on upland slopes, breaks and mesas.

(2) The deciduous tree/shrub type, usually dominated by the plains cottonwood, occurs on the Tongue River bottomlands, side drainages, and

near seeps where high moisture levels prevail throughout the growing season.

(3) The silver sagebrush/grassland type, dominated by silver sagebrush, western wheatgrass, and green needlegrass, is commonly associated with drainage bottoms and river terraces.

(4) The greasewood/grassland type, dominated by greasewood and western wheatgrass, occurs on localized sites on the Tongue River flood plain and on upland sites where saline soils exist.

(5) The skunkbrush sumac/grassland type occurs on steep slopes with thin, coarse soils, often in proximity to the coniferous type.

(6) The prairie vegetation type is comprised of grassland plant communities, which occur primarily on slopes, terraces, and sidehills.

(7) The pine/juniper is dominated by Ponderosa pine and Rocky Mountain juniper, with associated grass species.

(8) The breaks type is found on steep, highly eroded slopes and is variable in vegetation composition.

(9) The agricultural types of vegetation include dry and irrigated croplands, haylands, and tame pastures.

(10) The aquatic type consists of cattails, bullrushes, wet-site sedges, horsetails, rushes and other emergent and semi-emergent species (ICC, 1983).

Tongue River vegetation has been influenced by grazing and other agricultural land uses. General rangeland types of vegetation are classified as Badlands grassland and southeastern grassland. Climate, topography, soils, and the type of forage available dictates the rangeland's carrying capacity.

The Montana Natural Heritage Program (MNHP) has no records of threatened or endangered plant species occurrences in the immediate vicinity of the three proposed alignments. Two state species of special concern, the wooly twinpod (*Physaria didymocarpa variatron lanata*) and Barr's milkvetch (*Astragalus Barrii*) have been recorded to the west of the Four Mile Creek Alternative, west of State Route (S)314 (MNHP, 1998). The precise locations of these plants is not provided here at the request of the MNHP.

2.5.2 Terrestrial Wildlife

The project area includes the Tongue River bottomlands and side drainages, which provide year-round habitat for numerous species of wildlife. Wildlife populations utilizing the wide range of habitats along Tongue River are diverse. Beginning in the mid-1970s and, in some instances, continuing to date, detailed wildlife baseline and monitoring studies have been conducted for existing and proposed coal mines north and south of the project area (Montco Mine, East and West Decker Mines, Spring Creek Coal Mine, and CX Ranch Mine). The TRRC proposed route project area from Birney to the wildlife study areas for the Spring Creek Mine site and the Decker Mine sites (approximately 28 miles) have not been as intensively surveyed for wildlife. The wildlife information that exists for this section of the project area is more general than for other areas. However, the vegetation types of the project area have been classified in detail. This data provides wildlife habitat information. Together with the wildlife data north and south of the project area, this habitat data allows assessment of wildlife resources in the project area.

During wildlife surveys conducted on the Montco study area from 1978 to 1989, 166 bird species, 36 mammal species, eight reptile, and four amphibian species were recorded. For the CX Ranch Mine project area on Squirrel Creek and the Tongue River south of the southern TRRC terminus, 155 bird, 44 mammal, 10 reptile, and four amphibian species were recorded during baseline and monitoring studies from 1979 to 1986. Skarr et al. (1985) list bird species found in Montana by "latilong" (the area between adjacent parallels of latitude and meridians of longitude). The latilong that includes the TRRC project area is number 43 (of 47 in Montana). Within this latilong, recorded observations of bird species totaled 215. Of these, 132 species are expected to breed in the latilong and 60 species are expected to overwinter there. In latilong 43, Thompson (1982) has listed 46 mammal, 11 reptile, and six amphibian species.

Habitat requirements for wildlife species on the project area are met by combinations of topography and vegetation types. Wildlife habitat types are based on existing vegetation and correspond to the vegetative types described in Section 2.5.1 of this report. Wildlife species most commonly observed in the project area are described below.

Mule Deer

Mule deer are the most common big game animal in the project area, and throughout southeast Montana. The mule deer herds have been described generally as an essentially non-migratory herd, utilizing different habitats in the same general area throughout the year

(USDA-FS, 1978; Olson-Elliott and Associates, 1980a-b; Westech, 1982-1989). Seasonal distribution of mule deer in wildlife habitats along the Tongue River varies little, with the exception of late summer and early fall. During most of the year, deer use the habitats associated with the uplands and breaks areas, which provide shelter and escape cover in the form of ponderosa pine and juniper. Also, the uplands and breaks areas offer abundant forage of shrubby coulees, seeps, and grasslands. South and southwest aspects, which melt or blow free of snow quickly, provide adequate wintering areas. Haystacks in the agricultural areas along the river bottom also provide winter forage for deer. During the heat of summer months, when upland vegetation becomes desiccated, mule deer numbers are greatest in the lower coulees where they seek cover during the days and feed in moist areas or irrigated haylands during the nights. At this time of year, there is greater daily movement of deer between the upland areas and the Tongue River bottomland.

White-tailed Deer

White-tailed deer are concentrated in the Tongue River agricultural and riparian areas on a year-round basis. Timbered upland and coulee vegetative types are also used by white-tailed deer (Knapp, 1977). Numbers of observations along the Tongue River decline rapidly as riparian vegetation (primarily willow) thins upstream of the Canyon Creek-Tongue River confluence. The lack of dense cover provided by the willows apparently restricts deer use of the river bottoms upstream of this confluence (ICC, 1992). Primary wintering areas for white-tails are in the river bottom.

Pronghorn

Pronghorn in the vicinity of the project area are found in greatest numbers on benchlands south of Four Mile Creek, including Post Creek, Leaf Rock Creek, Monument Creek, and Spring Creek (ICC, 1992). Pronghorn are reported to winter in the area, and migrate seasonally, with some animals moving between the Tanner Creek area and the Spring Creek area (Phillips, 1979). A pronghorn doe marked by the Fish and Wildlife Service near Decker was observed north of Birney in 1979 (ICC, 1992). Other records have been made of Decker area animals moving 70 miles or more, primarily to or from winter ranges. There is occasional use of the project area along the river bottom downstream of the reservoir by pronghorn crossing the Tongue River during winter months (ICC, 1992).

Upland Game Birds

Sharp-tailed grouse and sage grouse are species native to this part of Montana. Ring-necked pheasant, gray (Hungarian) partridge, and Merriam's turkey have been introduced to the area. All occur in huntable populations and breed on or near the project area. No native grouse dancing grounds (lekking areas) are known to occur immediately in the project area right-of-way. Although climatic conditions are often responsible for fluctuations in turkey abundance, turkey populations have expanded rapidly in southeast Montana in the last ten years, and the Tongue River area is no exception. Large numbers of turkeys winter on many of the ranches between Birney to the Tongue River Dam (ICC, 1992).

Waterfowl

Eighteen species of waterfowl have been recorded on or near the project area, although not all are commonly found there. These are: Canada goose, white-fronted goose, mallard, gadwall, pintail, green-winged teal, blue-winged teal, American widgeon, northern shoveler, wood duck, redhead, ring-necked duck, lesser scaup, common godeneye, bufflehead, ruddy duck, hooded merganser, and common merganser.

Raptors

Twenty-three species of raptors have been observed in the vicinity of the project area (Olson-Elliott, 1980; Westech, 1982-89), excluding shrikes and members of the family Corvidae. Not all species, however, are commonly found in the region. These are: turkey vulture, goshawk, sharp-shinned hawk, Cooper's hawk, red-tailed hawk, Swainson's hawk, rough-legged hawk, ferruginous hawk, golden eagle, bald eagle, northern harrier, osprey, gyrfalcon, prairie falcon, peregrine falcon, merlin, American kestrel, screech owl, saw-whet owl, great-horned owl, burrowing owl, long-eared owl, and short-eared owl.

Bald eagles are known to winter along the open water areas of the Tongue River. A biological survey of the Tongue River Valley, conducted in 1992 identified two bald eagle nests in the Tongue River Valley near the project area (Westech, 1995). Those nests were used interchangeably by the same pair of eagles for several years. One nest was approximately eight miles north of the Tongue River Dam, and one nest was approximately 2.5 miles north of the dam. Both nests were reported to the U.S. Fish and Wildlife Service and to the Montana Department of Fish, Wildlife, and Parks (MDFWP) and have been assigned location numbers. More recent surveys of the river valley were not able to locate the nest eight miles north of the dam (Berry, 1998). This nest may have been destroyed.

Other Mammals

Many species of small mammals have been trapped or observed in the vicinity of the project area. These include: masked shrew, little brown myotis, long-eared myotis, small-footed myotis, silver-haired bat, hoary bat, western big-eared bat, thirteen-lined ground squirrel, least chipmunk, red squirrel, fox squirrel, northern pocket gopher, olive-backed pocket mouse, Ord kangaroo rat, western harvest mouse, deer mouse, white-footed mouse, bushy-tailed wood rat, meadow vole, prairie vole, sagebrush vole, mountain vole, long-tailed vole, meadow jumping mouse, house mouse. The most commonly trapped species were deer mice.

White-tailed jackrabbit, desert cottontail, mountain cottontail, black-tailed prairie dog, yellow-bellied marmot, and porcupine are also common residents of the area. Bobcat, beaver, muskrat, raccoon, long-tailed weasel, mink, and otter have been recorded in or near the project area. In addition, coyote, red fox, striped skunks, and badgers are seen frequently in or near the project area.

Threatened and Endangered Species

As part of activities associated with the Final EIS for the Original Preferred Alignment and the Four Mile Creek Alternative (STB, 1996a) and in accordance with Section 7(c) of the Endangered Species Act, the United States Fish and Wildlife Service (FWS) and the STB determined that bald eagles, peregrine falcons, pallid sturgeon, and black-footed ferrets are "species of concern" within the general area. A Biological Assessment was performed to evaluate the status of these species in the project area (Appendix H).

The most documented use of habitat by bald eagles in the area is the 10-15 mile section of the Tongue River north of the Tongue River Dam. Aerial survey counts in 1992 found as many as 50 bald eagles along the Tongue River between Miles City and the upper end of the Tongue River Reservoir (Farmer, 1998). According to MDFWP (Flath, 1998), this probably reflects an influx of spring migrating eagles and is not indicative of normal use. A more typical average count for bald eagles frequenting the Tongue River Valley would be between 10 and 15 eagles.

There is potential peregrine falcon nesting habitat in the cliffs between Ashland and Birney. However, this is north of the project area and only one peregrine falcon sighting has been recorded that being in March of 1979 during the Montco Mine baseline study.

There have been no documented sightings of black-footed ferrets in the project area. Impacts to prairie dog towns also represent potential effects to black-footed ferrets. One or more black-tailed prairie dog towns of various sizes are present north of Birney, which is beyond the Western Alignment project area.

The pallid sturgeon is not known to occur, nor is appropriate spawning habitat available, in the reach of Tongue River associated with the project area (Appendix H).

2.6 Aquatic Ecology

2.6.1 Fishery Resources, Tongue River Reservoir

In Montana, the flow of the Tongue River is controlled by the Tongue River Dam. The dam is currently undergoing repairs. When completed, the storage capacity will be 80,000 acre feet (af), with a surface area of 3,612 acres. Tongue River Reservoir supports a cool water fishery that is primarily self-sustaining. Research completed in 1977 (Elser et al., 1977) found that fish populations, with the exception of those for northern pike (*Esox lucius*), are healthy and reproducing. Black and white crappie (*Pomoxis nigromaculatus* and *Pomoxis annularis*), largemouth and smallmouth bass (*Micropterus salmoides* and *Micropterus dolomieui*), walleye (*Stizostedion vitreum*), and sauger (*Stizostedion canadense*) are reproducing. Currently, only walleyes are supplemented with hatchery stock (ICC, 1992).

Spawning habitat for northern pike in the Tongue River Reservoir is limited. Pike prefer shallow, weedy bays and marshes for spawning, and these are rare in this reservoir. However, MDFWP now stocks northern pike in the reservoir. The other game fish found in the reservoir (walleye, sauger, crappie, and bass) spawn in areas dispersed around the reservoir.

A creel census conducted from July 1, 1992 to June 30, 1993 found that an estimated 2,634 anglers expended 6,317 angler days of fishing pressure on the reservoir (MDFWP, 1993). Anglers fished approximately 5.5 hours per day on average; thus, the total average angler hours for the census year was 34,743 hours. The Tongue River Reservoir has produced the state record black crappie (in 1973), northern pike (in 1972), and rock bass (in 1989) (Riggs, 1998).

2.6.2 Fishery Resources, Tongue River

Physical Habitat

The Tongue River drains an approximately 5,379 square mile area, seventy percent of which is in Montana, with an average annual discharge of approximately 420 cfs at the mouth. The two typical streambed formations are: 1) in strong current, gravel, cobblestones, and outcroppings of bedrock, and 2) in slack or slow current, silt, and sand. Gravel is generally the most common substrate type. The Tongue River probably contains a lower amount of silt than most prairie streams because of the Tongue River Dam. Clear water released below the dam in place of the sediment laden flows that is typical of prairie streams has probably caused erosion of the channel and lowering of the streambed below the dam. Turbidity increases and quality is degraded as the river flows north. This is caused from agricultural runoff and natural sedimentation.

Fishery Resources

Elser et al., (1977) divided the Tongue River downstream from the Tongue River Dam into five zones based on habitat and species composition. These zones are defined in Table 2-3. Each zone has unique fishery characteristics. The longitudinal distribution of fish is influenced by irrigation structures, hence the boundaries of several zones are defined by irrigation structures. Table 2-4 lists the species of fish found in each zone and in the Tongue River Reservoir. Construction activities for the Proposed Action would be confined only to Fishery Zone V. MDFWP estimated that between the Tongue River Dam and Beaver Creek, the Tongue River provided approximately 1,799 angler days during the 1995-1996 fishing year (MDFWP, 1995).

Table 2-3. Fishery Zones in the Tongue River[1]

Stream Reach	Upper Boundary	Lower Boundary
Zone V	Tongue River Dam	Brewster's Dam
Zone IV	Brewster's Dam	Mobley's Dam
Zone III	Mobley's Dam	S-H Dam
Zone II	S-H Dam	Pumpkin Creek
Zone I	Pumpkin Creek	mouth

[1] Adapted from Elser et al., 1977.

The most abundant fish in the Tongue River is the shorthead redhorse (*Moxostoma macrolepidotum*). Other species of sucker are also found. A complete listing of the fish species found in the Tongue River is given in Table 2-4.

In Zone V, the deepwater withdrawal system of the Tongue River Dam releases cool hypolimnetic waters to the Tongue River. Directly downstream of the dam, the river supports a trout fishery. The MDFWP annually stocks the Tongue River with hatchery-raised rainbow trout (*Oncorchychus mykiss*) in the area below the dam. There is a small amount of overwinter survival of these fish. There is also a very small brown trout (*Salmo trutta*) population that lives in this section of the river that is not supplemented by stocking (ICC, 1992).

The water gradually warms downstream and the fishery changes into a more typical prairie stream system. The primary game fish in the Tongue River is smallmouth bass (*Micropterus dolomieui*). Smallmouth bass are relatively new to the system, having been introduced around 1970 in the Birney area. They have since spread throughout the river system and are the fish most sought after by anglers (ICC, 1992).

Although most studies have found smallmouth bass to be a sedentary species (Fajen, 1962; Munther, 1970), Tongue River smallmouth bass have been found to exhibit a marked tendency to move long distances at two specific times of the year. During the spring (April and May), individuals larger than 12 inches move upstream, some as far as 50 miles. This movement is probably related to the nesting season. Hanging Woman Creek and Otter Creek are used by these fish in the spring for nesting (Clancey, 1980).

By September and October, smallmouth larger than 12 inches have moved downstream. A high proportion of these fish move into a short reach of river with boulder substrate, resulting in a concentration of fish in the fall (Clancey, 1980).

The year class strength of smallmouth bass varies, depending upon the environmental conditions on young of the year fish. Low temperatures during nesting and post nesting periods are detrimental to that year's survival. Other factors that have been cited as affecting survival are silt, fungus, predation, diseases, starvation, wind, and floods. Smallmouth bass spawning in the Tongue River typically occurs in late May, and the fry emerge in about two weeks (Clancey, 1980).

Table 2-4. Tongue River Reservoir and Tongue River Fishes[1]

	Tongue River Zones					Tongue River Reservoir
	V	IV	III	II	I	
Brown Trout	*					*
Whitefish	*					
Northern Pike	*	*				*
Yellow Perch	*	*				*
Black Crappie	*	*				*
Yellow bullhead	*	*				*
Rainbow trout	*	*	*			*
Rock bass	*	*	*	*		*
Mountain sucker	*	*	*	*		
Pumpkinseed	*	*			*	*
Smallmouth bass	*	*		*	*	*
White crappie	*	*		*	*	*
River carpsucker	*	*	*	*	*	
Carp	*	*	*	*	*	*
Stonecat	*	*	*	*	*	*
Shorthead redhorse	*	*	*	*	*	*
White sucker	*	*	*	*	*	*
Longnose sucker	*	*	*	*	*	*
Longnose dace	*	*	*	*	*	*
Black bullhead		*	*			*
Green sunfish		*	*	*		*
Channel catfish		*		*	*	*
Sauger	*	*	*	*	*	*
Flathead chub		*	*	*	*	
Goldeye					*	
Burbot					*	
Walleye					*	*
Paddlefish					*	
Shovelnose sturgeon					*	
Blue sucker					*	
Sturgeon chub					*	
Golden shiner						*
Goldfish						*
Largemouth bass						*
Total Number of Species	20	22	14	15	20	24

[1] Elser et al., 1977.

NOTE: Common names of fishes correspond to those presented by the American Fisheries Society (1970).

See Table 2-3 for the definition of zones.

Northern pike (*Esox lucius*) are popular, although limited, game fish in the Tongue River. They utilize Hanging Woman Creek for spawning in April and May (Clancey, 1980).

Invertebrate fauna

Macroinvertebrates are abundant in the Tongue River and its tributaries. The invertebrate communities in these streams are similar to those in warm water streams throughout southeastern Montana. The most significant change in community structure occurs in the upper reaches of the Tongue River, where the fauna is influenced by cold water discharges from the Tongue River Dam. This influence decreases downstream and the faunal changes are more gradual. The turbidity of the lower portion of the Tongue River affects the relative abundance of certain species, with the most tolerant forms dominating (Gore, 1976).

Periphyton

Green algae *Cladophora* is abundant in the Tongue River during fall, while diatom species are prevalent in the spring. Bluegreen species *nostoc* are the dominant periphyton in lower reaches of the Tongue, where turbidity is high. Community analysis suggests that the Tongue River is indicative of low to moderately enriched hardwater environments, with comparable low productivity (Gore, 1976).

2.7 Social and Economic

The geographic scope of this ER for social and economic purposes generally encompasses five counties. Four are in Montana: Rosebud, Big Horn, Custer, and Powder River. The fifth is Sheridan County in Wyoming. The four Montana counties include parts of the proposed Tongue River Railroad while Sheridan, Wyoming, is the nearest city to the southern end of the railroad and will be affected by its construction. Section 2.7.4 focuses this description of social and economic conditions to the area along the Western Alignment to the extent possible.[1] Existing conditions on the two Indian reservations in the five-county region are briefly summarized in Sections 2.7.5 and 2.7.6. As indicated in Chapter Four, these reservations are not directly

---

[1] Unlike most of the other sections of this chapter, this discussion of social and economic impacts is sometimes directed at an area much larger than the immediately adjacent areas around the Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment. There are three reasons for this. First, social and economic impacts often affect a larger area (e.g., property tax revenues benefits school children in Colstrip and Forsyth). Secondly, the data on social and economic conditions are collected, aggregated, made available, and updated on areal units that go beyond the area immediately around the railroad. Thirdly, the cost data and planning that the TRRC engineers are developing are being developed for the entire railroad. Sometimes it is difficult and often it is not necessary to breakdown these data to the final 17 miles of what is being planned as a single project.

affected by the Western Alignment or the alternative routes. The Western Alignment and the Original Preferred Alignment are farther away from these reservations than is the Four Mile Creek Alternative.

2.7.1 Population for the Five County Region

Table 2-5 shows the population of each of the five counties for the years 1980, 1990, an estimate for the year 1995, and a projection for the year 2000. This sparsely populated region suffered population decreases during the 1980s, but has begun to show modest population increases during the 1990s. The decrease in population was linked to the decline in coal mine construction employment that occurred in the region. Following the opening of five mines in the region in the 1970s, no new mine development occurred in the early 1980s, resulting in a 50 percent decrease in mine-related employment between 1980 and 1985 (MDNRC et al., 1996). However, the annual population increase in recent years has been approximately one percent per year, which is less than the 1.7 percent annual increase for the state as a whole.

The largest city in the region is Sheridan, Wyoming, which had a 1995 estimated population of 14,650.

Table 2-5. Population (Actual and Estimated) for the Five County Region

Year	Big Horn	Custer	Rosebud	Powder River	Sheridan (Wyoming)	Total
1980	11,096	13,109	9,899	2,520	25,048	61,672
1990	11,317	11,697	10,505	2,090	23,562	59,171
1995	12,215	12,193	10,881	1,969	25,040	62,298
2000	12,590	12,210	11,700	1,880	25,900	64,280
Percent Change 1990-1995	7.9	4.2	3.6	-5.8	6.3	5.3

Source: U.S. Dept of Commerce, Bureau of the Census (for 1990 and 1980 actuals). Estimates from Montana Dept. of Labor and Industry, R&A Bureau. Wyoming Division of Economic Analysis, Oct. 1997 estimates for Sheridan Co.

2.7.2 Employment, Income, and Poverty Rates for the Five County Region

A good set of indicators of economic health for a region is its percentage of unemployed workers, its median household income, and rates of poverty. As shown in Table 2-6, the picture for the five county region is mixed. Unemployment is high in Big Horn and Rosebud Counties although the median household income in Rosebud County is high relative to the state average.

Poverty rates are very high in Big Horn County and moderately high in Rosebud County. The explanation for the high unemployment and poverty rates in Big Horn and Rosebud Counties is due, in large measure, to the high proportion of Native Americans in these counties. As discussed later in this section, high unemployment rates and poverty are endemic on the two Indian reservations located in the region. More than half of Big Horn County's population and more than one quarter of Rosebud County's population is comprised of Native Americans. This compares to less than 6 percent for the entire state (Montana Legislative Council, 1995).

Table 2-6. Unemployment Rates, Incomes, and Poverty Rates for the Five County Region

	Big Horn	Custer	Rosebud	Powder River	Sheridan (Wyoming)	State of Montana
Unemployment Rate (1996)	10.1%	4.6%	11.2%	1.6%	4.8%	5.3%
Median Household Income (1993)	$22,703	$26,484	$32,936	$28,075	$29,887	$26,386
Poverty Rates (1993)	30.2%	15.9%	18.1%	11.1%	11.6%	15.2%

Sources: U.S. Bureau of the Census/Montana Dept of Commerce and Wyoming Dept of Economic Analysis

The relatively high median household income for Rosebud County is related to the large number of coal mining and electric power production jobs, which pay significantly higher wages than other industries in the state. The four largest employers in Rosebud County are coal mining and power production companies (Montana Dept of Labor and Industry, 1996). Although the two Decker coal mines (East and West Decker) and the nearby Spring Creek Coal Mine are all located in Big Horn County, the great majority of the work force commutes to the jobs from their homes in Sheridan. According to the U.S. Bureau of Census, there were 419 Sheridan County (Wyoming) residents who were employed at these three mines in 1990.

2.7.3 Governmental Structure and Services for Five County Region

Local government in the region is directed by three-person county commissions. Miles City, Forsyth, Sheridan, and Broadus are incorporated communities in the area, and they rely on a part-time mayor/city council system. All five counties have part-time or full-time planning staffs (ICC, 1992).

The major source of revenue for county and city governments is the property tax. The four coal-fired power plants near Colstrip account for nearly two-thirds of the taxable property valuation in Rosebud County, with much of the remainder coming from taxes on coal mining equipment and oil and gas production equipment (MDNRC, 1996). Other sources of revenue are intergovernmental transfers and miscellaneous collections including license fees, permit fees, fines, and user charges. Intergovernmental transfers include coal severance taxes. Part of the severance tax goes to a trust fund where interest earned is used for infrastructure (e.g., highways and bridges) and part goes to fund state and local government operations.

Local services within the study area are provided by each county, with the exception of Miles City and Sheridan, which have their own fire and police departments. Forsyth has a consolidated police and sheriff's office. Deputy sheriffs generally are located throughout the county, as are ambulance services and volunteer fire departments.

Miles City and Forsyth each have a private hospital, and clinics are located in Colstrip, Ashland, Lame Deer, and Broadus. Sheridan County has one county hospital with 88 beds. The Veteran's Administration Hospital has 339 beds. There are eight nursing/rest homes with 405 beds. Thirty-three doctors and 16 dentists practice in Sheridan County. There is emergency medical transportation available (ICC, 1992). However, the number of physicians per capita is well below the national average. Libraries are located in Sheridan, Miles City, Forsyth, and Broadus.

In addition to general service government, the region is divided into several high school and elementary school districts (kindergarten through eighth grade). Education is financed by district property taxes and by the state school-foundation program.

The most important recreational outlets in the study area are outdoor activities and community or school events such as plays, dances, and athletics. The larger communities provide some public recreational facilities, and limited commercial recreational facilities are also available. Sheridan County has 11 ball fields, five soccer fields, two ice skating rinks, four swimming pools, 13 tennis courts, and two golf courses. There is one bowling alley, two indoor movie houses, one outdoor movie theater, one YMCA facility, and an amateur theater.

Hunting, fishing, hiking and picnicking are the most important outdoor activities. Residents rely on developed and undeveloped recreation sites along the Tongue River and on nearby national forest lands for much of their outdoor activities. These resources currently have low levels of utilization. In the smaller communities, most social activities are centered around local schools. All age groups are generally involved and total family participation is common.

2.7.4 Immediate Project Area

Figure 2-1 shows the focus area for this ER as it regards social and economic conditions. Two Bureau of Census geographic units comprise this area. These are the Tongue River Division of Big Horn County and the Ashland Division of Rosebud County (which excludes the town of Ashland but includes the area to the south including the community of Birney). The Western Alignment begins in the central portion of the Ashland Division and terminates on the south end in the Tongue River Division. The town of Ashland is also discussed in this section because it is the community nearest to the Proposed Action.

Table 2-7 shows selected 1990 Bureau of Census data for the two census units directly affected by the Western Alignment.[2] These data show that the area is very thinly populated with a total of only 662 people in an area measuring 1053 square miles. The population density for these two divisions is 0.6 person per square mile compared to 5.5 for the state of Montana and 73.7 for the U.S. Both census units have more males than females, with a two-to-one ratio in the Tongue River Division. This contrasts with the state and national breakout (49.5 percent male in the state as a whole).

Both census units are overwhelmingly "white" in racial makeup. According to the U.S. Bureau of Census, the 92.9 percent white designation for the two census units is almost identical to that reported by the State as a whole (92.8 percent). The median household income for the Tongue River Division ($40,972) is considerably higher than that of the Ashland Division ($22,857), which is close to the statewide average ($22,988) (U.S. Bureau of Census, 1990). Although the median incomes for the two census units are higher and similar to that of the state, respectively, the percentage of persons living in poverty is slightly higher in the Tongue River Division (19.5) and moderately higher (27.5 percent) for the Ashland Division than for the state as a whole (16.1 percent).

---

[2] At this level of geographic detail, the 1990 Census provides the most recent information.

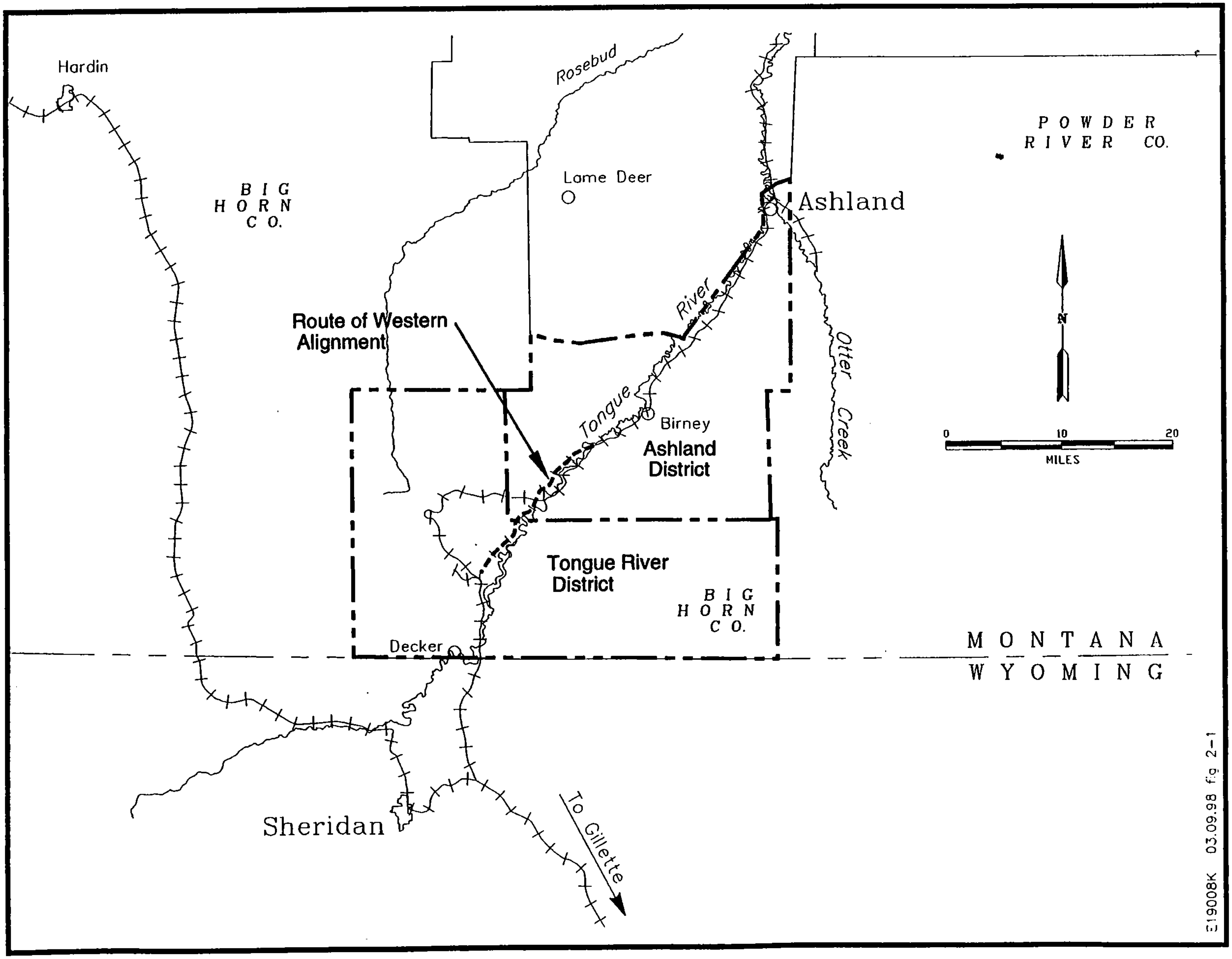


Figure 2-1. Location of Ashland Division and Tongue River Division Census Units

Table 2-7. Selected 1990 Census Data for the Tongue River and Ashland Division

Census Parameter	Tongue River Division	Ashland Division
Population	164	498
Male	112 (68%)	267 (54%)
Enrolled in school•	24	118
Households	61	172
Race: White	159 (97%)	456 (92%)
American Indian	4	34
Other	1	8
Occupied houses (vacant houses)	61 (12)	189 (50)
Number of vacant houses available for rent (for sale)	3 (0)	N/A
Median Household Income in 1989	$40,972	$22,857
Percentage of Persons in Poverty	19.5	27.5

The commercial center for this rural area is Ashland, which in 1990 had a population of 484 persons. According to the *Rosebud-Ashland Community Development Plan* (Ashland CAT, 1995) the community is characterized as follows:

- Many buildings are dilapidated and in need of repair;
- Main business district includes a dozen retail shops (gas stations, stores, café, motel) and a bank;
- There is a single public school for grades K through eight and another at the St. Labre Indian Mission;
- The St. Labre Indian Mission is the largest employer (220) with a lumber mill, mission, and school;
- Drinking water quality is poor (meets EPA primary standards but has a sulfurous odor and a salty taste);
- Has no access to bus, air, or rail service;
- There is no park and no library services are available to the public;
- Unemployment is high with nearly 30 percent in 1990, compared to seven percent for the State as a whole;
- In 1990 the per capita income was one third that of the State as a whole, and the poverty rate was 71.9 percent;

- The water and sewer system was built in 1974 (in anticipation of a coal boom) and can handle a population of 3,500 (several times its current use);

- Housing supply is considered to be woefully inadequate to non-existent and most existing occupied housing is rated at either poor or moderately poor in quality; and

- The most critical need expressed by existing residents was improved access to medical care. This has been met, in part, by the opening of a new clinic since 1995.

The Lame Deer Volunteer Fire Department serves Lame Deer, Ashland, Busby, and Birney. Inadequate equipment from limited funding and lack of available water hampers its effectiveness. The rating service of the Insurance Services Office, Commercial Risk Services, Inc., has given the Lame Deer Volunteer Fire Department a score of eight on a scale of one (best) to 10 (worst) (MDNRC, 1996). A more detailed description of the emergency and fire protection services in the immediate project area appears in Section 2.8.

2.7.5 Northern Cheyenne Indian Reservation

As shown in Section 2.12 (Figure 2-4), the Proposed Action would not directly affect either the Northern Cheyenne or the Crow Indian reservations. Because indirect effects are possible, Sections 2.7.5 and 2.7.6 provide social and economic data on these areas. The Bureau of Land Management (BLM) in their "Social, Economic, and Cultural Supplement" to the Powder River Coal Lease Draft EIS (1989) provided a detailed analysis of the current social and economic conditions on the Northern Cheyenne Indian Reservation. The following points characterizing the socio-economic environment provide a summary, with some updating, of the findings presented in that document.[3]

- In 1986 there were approximately 4308 persons living on the reservation of which all but 13 percent were Native American. Some 85 percent of the Native Americans were enrolled members of the Northern Cheyenne Tribe. By 1990, the number of persons on the reservation had declined to 3,923.

- In 1986 unemployment rates on the reservation exceeded 50 percent and over 60 percent of those who did have work were employed either by tribal or by federal monies.

---

[3] Unless otherwise noted, all information has been derived (and updated in places) from the Bureau of Land Management Draft, "Social, Economic, and Cultural Supplement," June 1989, pp. 35-60. The Bureau of Land Management Final EIS was published June, 1990.

- Per capita incomes on the reservation are less than two-thirds that of the rest of the Powder River region.

- In 1987 there were 1169 housing units on the reservation of which more than 10 percent were considered to be substandard. More than 300 families were on waiting lists for housing assistance.

- For both the Northern Cheyenne and the Crow Indian reservations, a comparison of the causes of deaths reveals the following: life expectancies are lower, and rates of death are higher from motor vehicle accidents, cirrhosis of the liver, suicide, homicides, diabetes, congenital anomalies, and tuberculosis.

- Health care, law enforcement, fire fighting, and criminal justice services were judged to be inadequate in 1987.

- Water and sewer facilities were judged to be adequate but additional solid waste disposal canisters were needed at Lame Deer and Birney Village.

- Education problems include high dropout rates.

2.7.6 Crow Indian Reservation

The BLM in their "Social, Economic, and Cultural Supplement" to the Powder River Coal Lease Draft EIS (1989) provided an analysis of the current social and economic conditions on the Crow Indian Reservation. See Figure 2-4 in Section 2.12 for the location of the Crow Indian Reservation. Because regional coal development was expected to have a minimal impact upon the Crow Indian Reservation, the BLM analysis was much less detailed than that provided for the Northern Cheyenne Indian Reservation. The following description of affected environment is a summation, with some updating, of the findings presented in that document.[4]

- In 1986 there were approximately 7700 persons living on the reservation of which all but 24 percent were Native American—most of whom were enrolled as members of the Crow Tribe. By 1990, the number of persons on the reservation had declined to 6,370.

- In 1986 unemployment rates on the reservation exceeded 50 percent and over 50 percent of those who did have work were employed by either the tribal or federal monies.

[4] Unless otherwise noted, all information has been derived from the BLM's "Economic, Social, and Cultural Supplement to the Powder River I Regional EIS," June 1989:61-72.

- Per capita incomes on the reservation are below that of the rest of the Powder River region.

- There is a severe shortage of adequate housing on the reservation.

- Health care and law enforcement services were judged to be inadequate in 1987.

2.8 Transportation

As shown in Figure 2-2, the major road serving the project area is Secondary Highway 566 (S566), a gravel or scoria surfaced road connecting Ashland on the north and traveling south along the Tongue River Valley. S566 extends south from Ashland east of the Tongue River to a point about eight miles south of Birney, where it crosses to the west side of the Tongue River. It continues to parallel the river until it reaches Four Mile Creek, at which point it turns west and follows Four Mile Creek until it joins with S314. From its intersection with S566 at Four Mile Creek, Rosebud County Road 528 parallels the Tongue River to Big Horn County; the road continues as Big Horn County 380 until it joins S314.

Other significant roads that serve the project area include 1) U.S. 212 connecting Busby, Lame Deer, and Ashland and 2) S314, the paved road that connects Sheridan, Wyoming, and Decker, Montana, and extends north from Decker to a junction with U.S. 212. Traffic levels for area roads are presented in Table 2-8.

Emergency services are limited in the immediate area of the proposed TRRC Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment. No medical facilities are available in Birney, the one community located nearest to the routes. Ambulance service for the Decker/Birney area is provided by Sheridan 911 Ambulance Service, operating from Sheridan, Wyoming (Bomar, 1998).

Fire protection services also represent a problem for residents in the project area. The Decker area of Big Horn County has a volunteer fire department which is at the county maintenance garage on Big Horn County 380, just north of the intersection with S314. The county has one 1,000-gallon pump truck and one "wild land" truck, suitable for off-road response, stationed at the county garage. A fire call for the volunteer fire department is also backed up by a dispatch from the county fire station at Hardin, a distance of about 25 miles. Trucks dispatched from Hardin continue to the Decker area to participate or are recalled when the volunteer fire department indicates there is no further need for response (Seder, 1998).

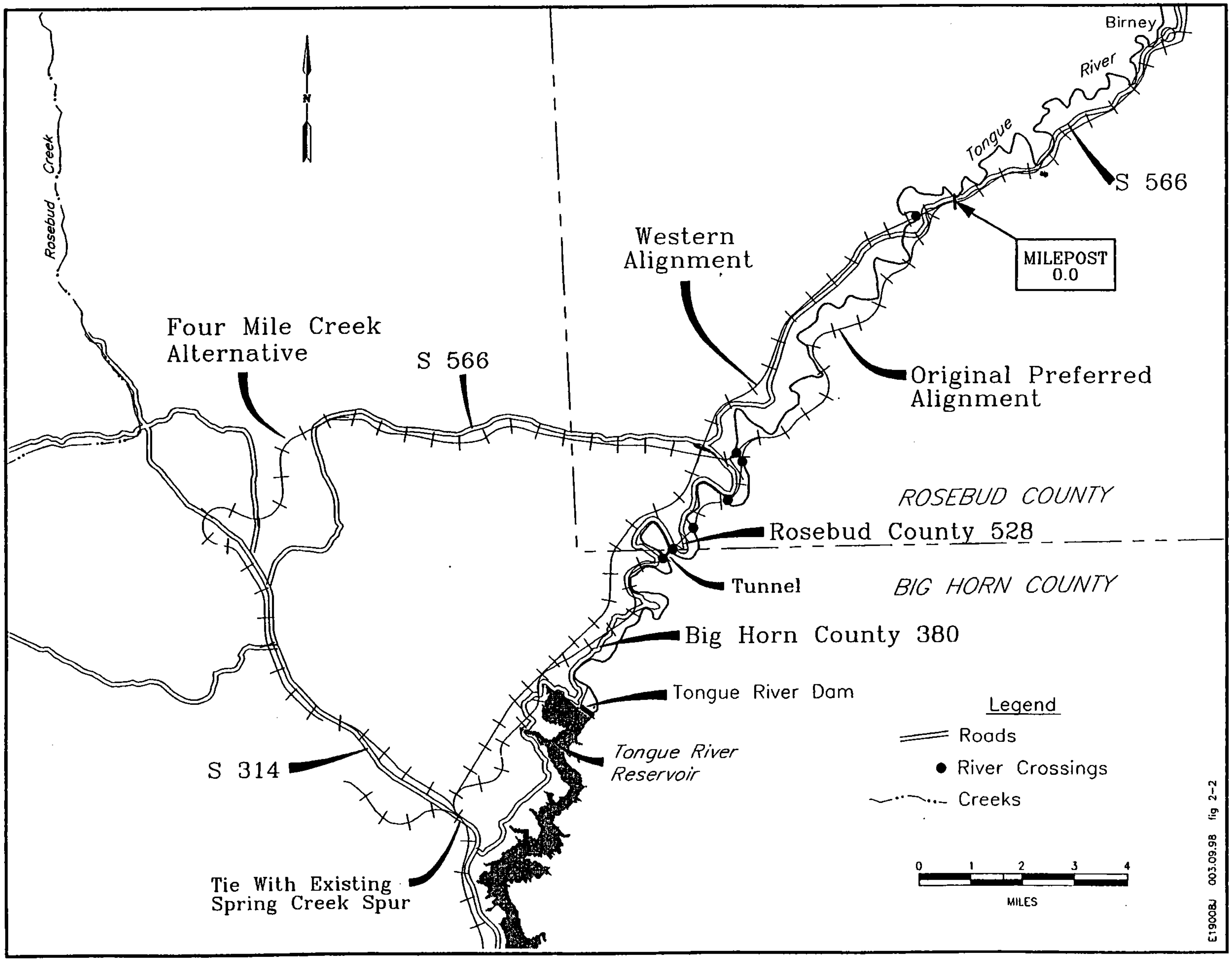


Figure 2-2. Locations of Roads for the TRRC Project

In the Ashland-Birney area there are only basic fire protection and medical services. There is a first responder structural fire capability in Ashland but travel to Birney on S566 is approximately 30 miles on a gravel road. There is no organized medical service in Birney. Basic emergency medical response are provided through ambulance service from the Bureau of Indian Affairs Clinic at Lame Deer. This is also an approximate 30-mile trip to Birney on gravel roads. If there is an injury requiring hospitalization, the patient would be transported to Billings by road or helicopter evacuation. Rosebud County has a maintenance garage and a worker stationed in Birney. Although his primary duty is road maintenance, he has a collateral responsibility to respond to range fires. The county has a vintage 6x6 truck with a 1200-gallon water tank at the county garage in Birney for responding to range fires (Fjell, 1998).

Principal medical facilities and fire protection in the general project area also are located in Colstrip, Forsyth, Ashland, and Miles City. The Lame Deer Clinic also provides urgent medical services to both Native Americans and non-Native Americans (ICC, 1992).

Table 2-8. Traffic Statistics for Selected Segments of Area Roads

Road Segment	ADHT Range[1] For 1994-1996	Total Accidents[2]	Total Injuries[2]	Total Fatalities[2]	Accident Rate[2]
S566					
Ashland to Birney	134 - 154	5	6	0	1.19
Birney to Four Mile Creek Junction	50 - 70	2	2	0	1.09
Four Mile Creek Junction to S314	50 - 80	1	1	0	0.65
S314					
Montana/Wyoming State Line to S566 Junction	498 - 565	6	1	0	1.12
S566 Junction to US 212 (West of Busby)	207 - 495	NA	NA	NA	NA

[1] ADHT = Average Daily Highway Traffic from MDT
[2] MDT now considers accident data confidential. Therefore, these data are from 1990.

2.9 Climate and Air Quality

The temperature and precipitation characteristics of the Tongue River Basin are typical of a semi-arid climate. The region experiences cool, moist springs; warm, dry summers; and cold, moist winters. Winters are influenced by high pressure, arctic cold air masses from Canada, and by moist air masses from the northern Pacific region. Spring and summer precipitation is usually the result of moist air from the Gulf of Mexico flowing northward which cools as it rises across the High Plains.

Precipitation in the region varies considerably from month to month. Mean annual precipitation levels range from about 12 inches at the lower elevations to 16 inches at the higher elevations. About one-half of annual precipitation occurs during the period from April to June. A large portion of this precipitation occurs as thunderstorms. Precipitation data collected from the region have shown late spring and early summer as the wettest periods and late summer as the driest period.

Wide annual temperature variations are experienced in the region. The mean annual temperature is about 45 degrees Fahrenheit (°F). Temperatures at Miles City have ranged from a low of minus 49°F in February to a high of 111°F in July. Mean monthly temperatures at Colstrip reach their lowest in January, about 8°F and their highest in July, about 90°F. The minimum and maximum temperatures recorded at the Montco meteorological station were minus 22°F (12/16/80) and 102°F (7/23/80).

Winds in the Tongue River Basin tend to blow from the northwest in fall and winter, from the west in spring, and from the southwest in summer. Near the Tongue River, winds are influenced by the orientation of the Tongue River Valley. Wind speeds are generally moderate, averaging approximately six miles per hour. However, during the passage of weather systems or near thunderstorms, wind speeds can be considerably higher. There are large diurnal (daily) and seasonal changes in mixing heights in the Tongue River region. Mixing height is the above-ground elevation where all air quality constituents are thoroughly mixed. Mixing heights generally are lower in the mornings and much higher in the afternoon. The morning mixing heights increase slightly in the spring, whereas the afternoon mixing heights are lowest in winter and considerable higher in spring and summer. This in an important factor in determining pollutant dispersion rates (ICC, 1992).

Air quality conditions in the Tongue River area are generally considered good (ambient air quality standards are set forth at 40 CFR 81.327). Higher than normal air pollutant concentrations have occurred around existing coal mines and populated areas. With the exception of Lame Deer, Montana, air pollutant levels in Southeastern Montana are well within Montana and federal ambient air quality standards. In December of 1990, Lame Deer was classified as a moderate non-attainment area for particulate smaller than 10 micrometers in diameter (also known as PM_{10}). Chemical mass balance of the Lame Deer area indicated airborne road dust as the primary cause of non-compliance with the PM_{10} ambient standards.

The remainder of the Tongue River Basin has been designated either as attaining the national ambient air quality standards (NAAQS) or as non-classified. Background PM_{10} measurements made during 1992-93 at the Spring Creek Coal mine have shown an average concentration of 13 micrograms per cubic meter ($\mu g/m^3$), as compared to the Montana and federal standard of 50 $\mu g/m^3$.

Per the Administrative Rules of Montana (ARM 17.8.806 (6)(a)), the Northern Cheyenne Reservation is designated as a Class 1 area and cannot be adversely impacted by a new air emission source.

Existing sources of air pollutants in the Tongue River Basin include various coal strip mines, agricultural operations, wood waste burning, home heating, vehicle traffic on unpaved roads, and wind erosion from exposed areas. Heavy equipment at the coal strip mines are significant sources for gaseous combustion products including sulfur dioxide, nitrogen dioxide, volatile organic compounds, and carbon monoxide. All of the sources listed above contribute total suspended particulate and PM_{10} to the ambient environment.

2.10 Noise

Noise levels are measured in decibels (dB). Sound levels that have been adjusted to represent frequencies as the human ear hears them are A-weighted decibels or dBA. Table 2-9 provides dBA levels typically associated with common sounds. Both the U.S. EPA and the Department of Housing and Urban Development (HUD) have developed noise guidelines for determining the acceptability of noise levels. These guidelines are based on average sound levels obtained over a 24-hour period with an increased sensitivity for nighttime noises (when sleep disruption can occur and when the public expects to be able to enjoy indoor and outdoor settings with reduced noise levels). Thus, the EPA and HUD guidelines are expressed in "day-night levels" (L_{dn}) to reflect a 10-dBA noise "penalty" for sounds measured between 10 p.m. and 7 a.m.

EPA has established a guideline of 55 L_{dn} (dBA) as an outdoor level that will typically avoid annoyance and interference with outdoor activities. HUD has established the 65 L_{dn} level as one which is generally acceptable for residential areas. A level of 55 L_{dn} or lower is considered "quiet" while a level of 65 L_{dn} or lower will be considered "acceptable" for residential areas and for other sensitive receptors such as schools and parks. STB's guideline of 65 L_{dn} at 49 CFR 1105.7 used in Chapter Four is based on these guidelines.

Common sounds in the project area are from motor vehicles and agricultural equipment and naturally occurring sources such as wind and animals. The background noise level in this area ranges from 30 to 40 L_{dn} with highest levels near major roads. Estimated average sound levels at 50 ft and 200 ft from S314 near the community of Decker are 65 L_{eq} and 59 L_{eq}, respectively (MDNRC et al., 1996).

Table 2-9. Comparison of Sound Levels for Typical Levels

Sound	Decibels (dBA)
Threshold of hearing	0
Breathing	10
Quiet bedroom at night	20
Library	40
EPA's Indoor Level for Avoidance of Interference and Annoyance	45 [a]
EPA's Outdoor Level for Avoidance of Interference and Annoyance	55 [b]
Normal conversation	60
HUD threshold of "normally unacceptable" residential noise	65 [a]
STB guideline	65 [b]
HUD threshold of "unacceptable" residential noise	75 [a]
Occupational Standard to protect hearing	90 [c]
Busy intersection	90
Power lawn mower or garbage truck	100
Loud motorcycle	110
Peak level from a rock band	120
Jet aircraft at 20 feet	140

Sources: EPA, 1974 and Wanielista, 1984.
[a] 24-hour L_{eq}
[b] in L_{dn}
[c] 8-hour L_{eq}

2.11 Cultural Resources

Part of the STB's environmental mandate requires compliance with Section 106 of the National Historic Preservation Act. Section 106 requires that prior to issuing any permit or license the Federal agency must evaluate the effects of the proposed project on any district, site, building, structure, or object that is listed in or found eligible for listing in the National Register of Historic Places. To fulfill this requirement, the STB relies on the rules promulgated by the Advisory Council on Historic Preservation implementing Section 106. Under these rules the Federal agency is required to: (1) make a reasonable and good faith effort to identify historic properties which may be affected by the undertaking and to gather sufficient information to evaluate the eligibility of these properties for inclusion in the National Register of Historic Places; (2) assess whether the proposed action will have an effect on the properties identified, and if so, whether the effect will be adverse; and (3) determine if there will be an adverse effect and seek ways to avoid or reduce the effect (ICC, 1992).[5]

Additionally, the American Indian Religious Freedom Act (AIRFA) requires Federal agencies to assess the impact of proposed projects on the right of Native Americans to exercise their traditional religions, including their access to sacred sites and the use and possession of sacred objects. Under AIRFA, Federal agencies are required to consider the policies embodied in that statute and must seek to avoid unnecessary interference with Native American religious beliefs and practices. The Federal AIRFA policy operates in addition to policies and procedures designed to evaluate historic Native American traditional sites pursuant to the National Historic Preservation Act (ICC, 1992).

The National Park Service of the Department of Interior, the agency responsible for administering the National Register of Historic Places, issued a bulletin entitled "Guidelines for Evaluating and Documenting Traditional Cultural Properties" (Parker and King, 1990). Because traditional cultural resources are often hard to recognize and are therefore in danger of being overlooked by archeological, historical, or architectural surveys, Bulletin 38 is designed to aid in determining whether properties thought or alleged to have traditional cultural significance are eligible for inclusion in the National Register of Historic Places (ICC, 1992).

[5]For State of Montana lands, cultural and paleontological resources must be inventoried and evaluated according to the Montana Antiquities Act.

Bulletin 38 also responds to AIRFA by assisting Federal agencies in protecting the religious freedoms of Native Americans. Thus, in describing the environmental and cultural setting, particularly of Native Americans, it is important to identify not only spiritual resources such as gravesites and religiously significant landforms, but also traditional cultural properties that are significant to Northern Cheyenne, Crow, and Sioux history but whose significance is not derived from spiritual attributes (ICC, 1992).

In completing its environmental review for the TRRC rail line extension (STB, 1996a) the STB, the TRRC, the Montana SHPO, the Advisory Council on Historic Preservation, and the Northern Cheyenne Tribe prepared a Programmatic Agreement (PA) for cultural and historic resources. That PA specifies the procedures to be followed by the TRRC in identifying and treating significant historic, cultural, and spiritual sites. The wording in the PA is broad enough to encompass the Western Alignment and is presented in its entirety in Appendix G.

2.11.1 General Overview

The Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment are located in the Northwestern Plains subarea of the Great Plains Culture area. The seven successive phases of possible human inhabitation identified in the project area are: the Paleoindian phase (9500-5500 BC); the Early Plains Archaic phase (6000-3000 BC); the Middle Plains Archaic phase (3000-500 BC); the Late Plains Archaic phase (1000 BC - AD 500); the Late Prehistoric phase (AD 500-1700); the Protohistoric phase (AD 1700-1800); and the Historic phase (AD 1800 - AD 1930) (Mulloy, 1966; Frison, 1978; Newell, 1980). The 1985 TRRC EIS details the artifacts and subsistence patterns associated with these phases (ICC, 1992).

Prehistoric inhabitation of the region is best represented by the Late Plains Archaic phase. Sites indicative of this period include lithic procurement areas, porcellanite workshops, lithic workshops, and campsites. Bison kill sites, rock art sites, and eagle-catching pits also may be represented. Figure 2-3 shows the location of the potentially eligible cultural resource property along the southernmost portion of the Tongue River Railroad Extension.

The early historic phase is typified by the decline of Native American dominance and the development of the open range livestock industry. The U.S. Army played an integral role during the period. Railroad development and homesteading encouraged the establishment of private land holdings in the regions. The creation of the Crow and Northern Cheyenne Indian Reservations in 1868 and 1884, respectively, established permanent cultural enclaves near the project area. In the

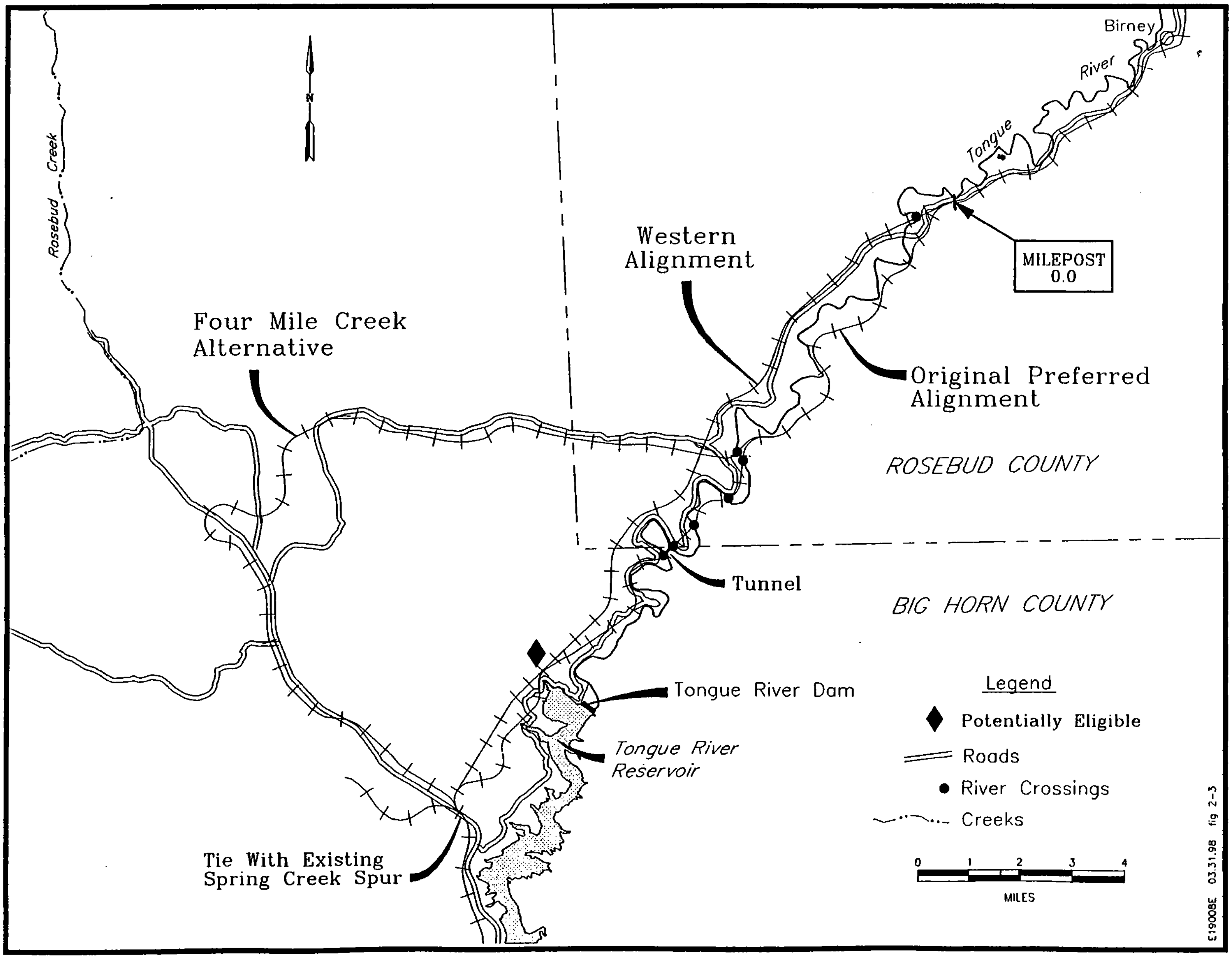


Figure 2-3. Potentially Eligible Cultural Resource

latter half of the 19th and first half of the 20th centuries, non-Indian homesteading and construction of the Tongue River Dam were major activities. Evidence of this period includes homestead structures, battle sites, campsites, transportation corridors, the Tongue River dam, and mining developments (ICC, 1992).

2.11.2 Property Types and Qualities of Significance: Prehistory

The most common property types likely to be found in the Western Alignment project area include: (1) lithic procurement sites; (2) lithic workshops; and (3) campsites. A lithic procurement site refers to a location where raw stone to be used in making tools was obtained. Lithic workshops represent areas where stone tool manufacture took place. Lithic workshops may be located at the raw material source (lithic procurement area), but often they are situated at a location more attractive for short-term camping or game observation. The category of campsites includes open camps, tipi ring camps, and rock shelter habitations. At all such locations, artifacts are present which indicate a variety of maintenance activities—those geared toward fulfillment of nutritional and technological requirements (ICC, 1992).

In addition to these three main categories of prehistoric properties, a variety of properties representing specific extractive (subsistence) or ritual activities are found in the area. For example, bison kill sites, where large numbers of bison were stampeded into natural or contrived traps, occur in the area. Rock art (pictograph or petroglyph) sites are also evident. Burials, wooden habitations or fortifications, medicine wheels, and stone structures of various kinds including cairns, fortifications, eagle-catching pits, and vision quest structures are more limited in occurrence but may be present in the Western Alignment project area (ICC, 1992).

2.11.3 Property Types and Qualities of Significance: History

Historic property types likely to be found in the Western Alignment study area include: (1) battle and military sites dating to the 1860s and 1870s; (2) historic agricultural settlements; (3) transportation facilities and structures; (4) historic coal mines; and (5) community buildings.

Battle and military sites are simple sites that may include breastworks (low mounds of dirt), rifle pits, or other excavations in the ground surface. When there are no physical remains, the entity that becomes the historical site may be the landscape itself (ICC, 1992).

Historic agricultural settlements will be represented by complexes that vary in size. This property type may not only include a small homestead with a house and one or two outbuildings, but may also include an extensive ranching complex with buildings specific to animal husbandry operations (lambing sheds, horse barns) and with outlying line camps (ICC, 1992).

The property types pertaining to transportation may be comprised of old roadways, bridges and trails. Abandoned railroad grades also would be included in this category (ICC, 1992).

Historic coal mines in the study area likely will be limited to small mines operated for domestic consumption only. Evidence of underground mines may include areas of subsidence, while evidence for surface mines may include stripped areas. Equipment may be present at a mine site, along with a tipple and remains of old rails (ICC, 1992).

Individual buildings in rural communities considered as historic property types may include residences associated with individuals or events of local or state significance. Community buildings such as schools, churches, and stores also may be included (ICC, 1992).

2.11.4 Traditional Cultural Properties

Project area resources that can be evaluated within the context of the National Historic Preservation Act may be defined as traditional cultural properties of significance to Native Americans, particularly to the Northern Cheyenne. These resources may be prehistoric or historic and may or may not be eligible for inclusion in the National Register of Historic Places. These resources may or may not have spiritual qualities and may or may not fall within the purview of AIRFA. The important point about them is that they have significance from a traditional point of view. Recent cultural resource work with the Northern Cheynne and at Tongue River Reservoir indicates that the Northern Cheyenne are concerned about the following site types: fasting sites, cairns, rock art sites, battle sites, homesites, buffalo kill sites, burials, and early Cheyenne homestead locations. The Northern Cheyenne, as well as the Crow and Sioux, believe the site types listed above may have spirits associated with them and are considered sacred by members of these Tribes (Tallbull and Deaver, 1991, Peterson et al., 1995).

2.12 The Northern Cheyenne and Crow Indian Tribes

As shown in Figure 2-4, the Northern Cheyenne Indian Reservation is located in Rosebud and Big Horn Counties, and the Tongue River forms the eastern boundary of the Reservation. It is approximately 677 square miles in size and current population is approximately 4,144 individuals (ICC, 1992). The Northern Cheyenne Reservation is approximately eight miles

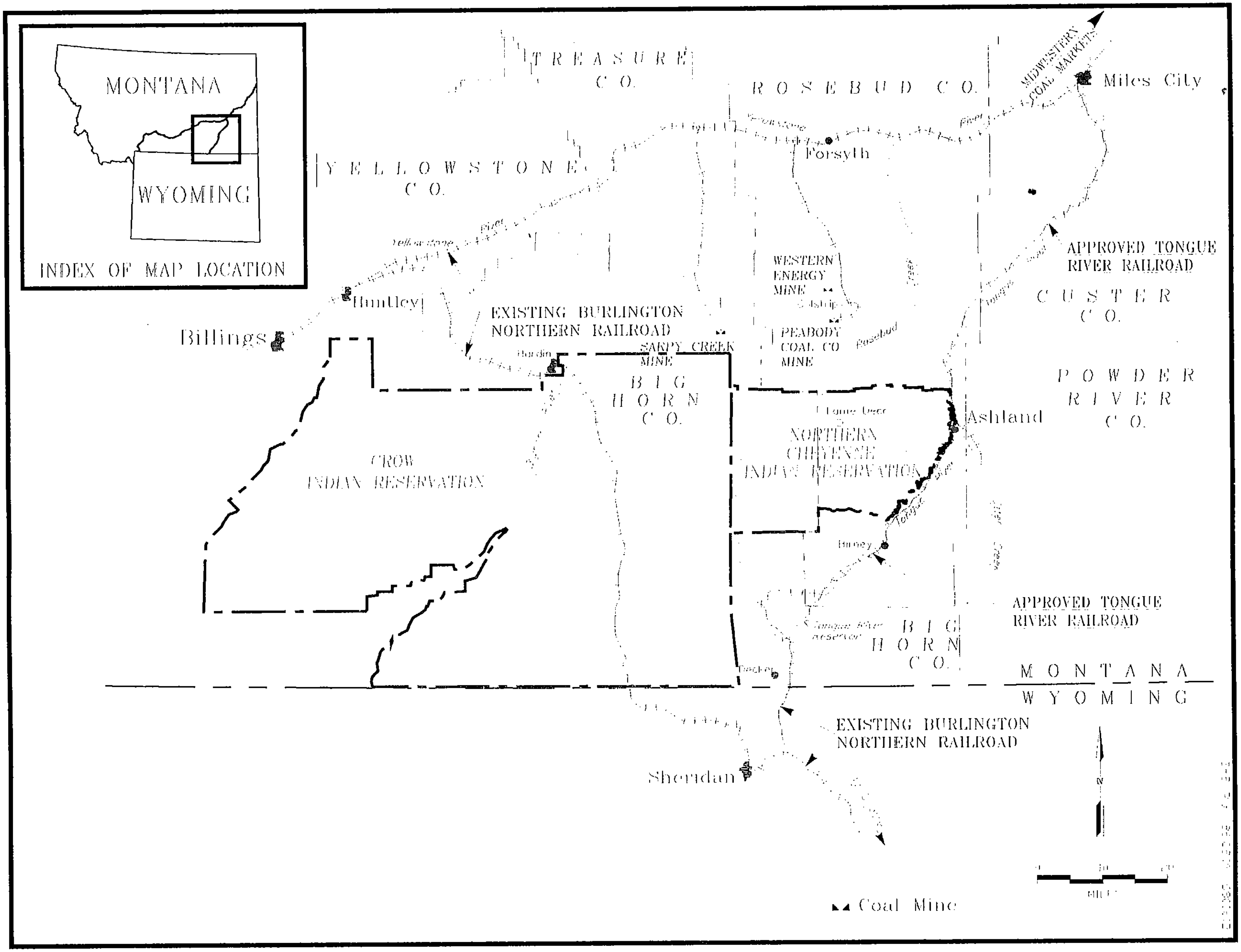


Figure 2-4. Location of the Northern Cheyenne and Crow Indian Reservations

downriver from the Western Alignment. While not directly impacted by the Western Alignment, the reservation may be indirectly impacted by the proposed construction and operation.

The Crow Indian Reservation, adjacent to the western boundary of the Northern Cheyenne Reservation, is located in Big Horn and Yellowstone Counties, Montana (see Figure 2-4). It is approximately 2,429 square miles in size with a current population of approximately 6,313 individuals (ICC, 1992). The Western Alignment ranges from between eight and 18 miles from the Crow Reservation; the Four Mile Creek Alternative is closer to the reservation. Since the Western Alignment is even farther away from the Crow Reservation than the Northern Cheyenne Reservation, the Western Alignment's level of indirect impacts on the Crow Reservation is expected to be even less significant.

Nevertheless, members of the Crow Tribe do consider the lands of the project area to be part of the traditional hunting regions of the Tribe and remain important in Crow history. Many Native Americans, including a number of Northern Cheyenne, hold traditional views about the environment. From the traditional Northern Cheyenne perspective, the existing environment has spiritual as well as physical qualities. The Crow, Arapaho, Oglalas, and Miniconjou, who also have historic ties to the area, share this most basic definition of the world. The universe is defined as animate, a living system, that contains both material and nonmaterial (spiritual) parts. The components of the system cannot be separated. Changes to material parts of the system cause changes to spiritual parts; the reverse is also true (ICC, 1992).

Chapter Three

CHAPTER THREE

3.0 Description of the Proposed Action and its Alternatives

This chapter begins (Section 3.1) by summarizing the current overall plan for constructing and operating the entire Tongue River Railroad from Miles City to the Spring Creek Mine rail spur. Next, Section 3.2 describes construction and operation of each of the Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment, respectively.

Section 3.3 provides a tabular comparison of the three route alternatives. Section 3.4 describes the no-build alternative. Section 3.5 discusses related actions associated with the Proposed Action.

3.1 Summary of The Overall Tongue River Railroad Project

The Tongue River Railroad Company (TRRC) was authorized by the STB in 1986 to construct an 89-mile single-track rail line from Miles City to two terminal points—one in Rosebud County and one in Powder River County. Beginning at its connection with the Burlington Northern Santa Fe's (BNSF) mainline in Miles City, the rail line will bear south and parallel the Tongue River Valley on the west side until a point about 10 miles north of Ashland, Montana (milepost 63.6), where it will cross the Tongue River and continue on the east side of the valley, to Ashland. Near Ashland, at milepost 72.2, the railroad will split with one branch following the Otter Creek drainage 7.7 miles to Terminus Point 2 and the other branch following the Tongue River 8.9 miles to Terminus Point 1. See Figure 1-1 in Chapter One.

In 1996, the STB approved a rail line extension ("Extension") connecting Terminus Point 1 and the Spring Creek Mine rail spur. Altogether the Extension, as approved, is 51 miles because it uses the Four Mile Creek Alternative. As shown in Figure 1-1, the approved route of the Extension follows the Tongue River drainage, generally paralleling the eastern side of the Tongue River Valley until south of the Northern Cheyenne Indian Reservation (the approved Extension would not cross any portion of the reservation). The approved route continues on the eastern side of the Tongue River Valley skirting to the east of the community of Birney. At a point approximately 21 miles south of Terminus Point 1, the approved route of the Tongue River Railroad leaves the Tongue River Valley where Four Mile Creek drainage enters into the Tongue River. It then moves westerly along the drainage climbing a 2.31 percent grade until reaching the

Four Mile Creek divide. From this high point, the route continues southwest and then turns south and east until it connects with a rail spur operated by the Spring Creek Coal Mine. This spur also connects with the East Decker and West Decker coal mines and the BNSF.

The new route proposed by the TRRC, the Western Alignment, would shorten the approved route by 12.1 miles. It parallels the Tongue River drainage but would be out of the Tongue River Valley. Assuming timely approvals by the STB and other agencies, the tentative schedule for the construction calls for work to be completed in three years. Weather permitting, work would proceed year round with most activity occurring during the April through October period. Because the northern four fifths of the line is not affected by the STB decision on the Western Alignment, some survey work, geotechnical studies, engineering, and right-of-way acquisition in this portion will continue during 1998. Initially, construction work will occur beginning at two points along the line, one in the north and another in the south.

3.2 Description of the Proposed Action and Alternative Routes

The Proposed Action is to construct and operate the Western Alignment as the final 17 miles of the approved extension in lieu of the Four Mile Creek Alternative. Section 3.2.1 below describes construction techniques for the entire line which would apply to the Proposed Action. Section 3.2.2 describes operation and maintenance. The various route alternatives are then described in Sections 3.2.3-5.

3.2.1 Construction Activities and Techniques

The TRRC will select an engineering and construction firm to design and build the entire line. Constructed according to current mainline standards, the Tongue River Railroad will be single track and will be comprised of 136-pound continuous-welded rail (CWR) on concrete ties. The track will rest on 12 inches of ballast and 12 inches of sub-ballast. Figure 3-1 shows a typical cross section of track. Ranging from a minimum of 75 feet to a maximum of 900 feet, the right-of-way (ROW) width will average approximately 200 feet.

The TRRC proposes that the railroad will be dispatched and operate under a Track Warrant Control System. Communications will be provided by the use of two radio frequency channels assigned by the FCC and possibly via commercial or leased telephone lines.

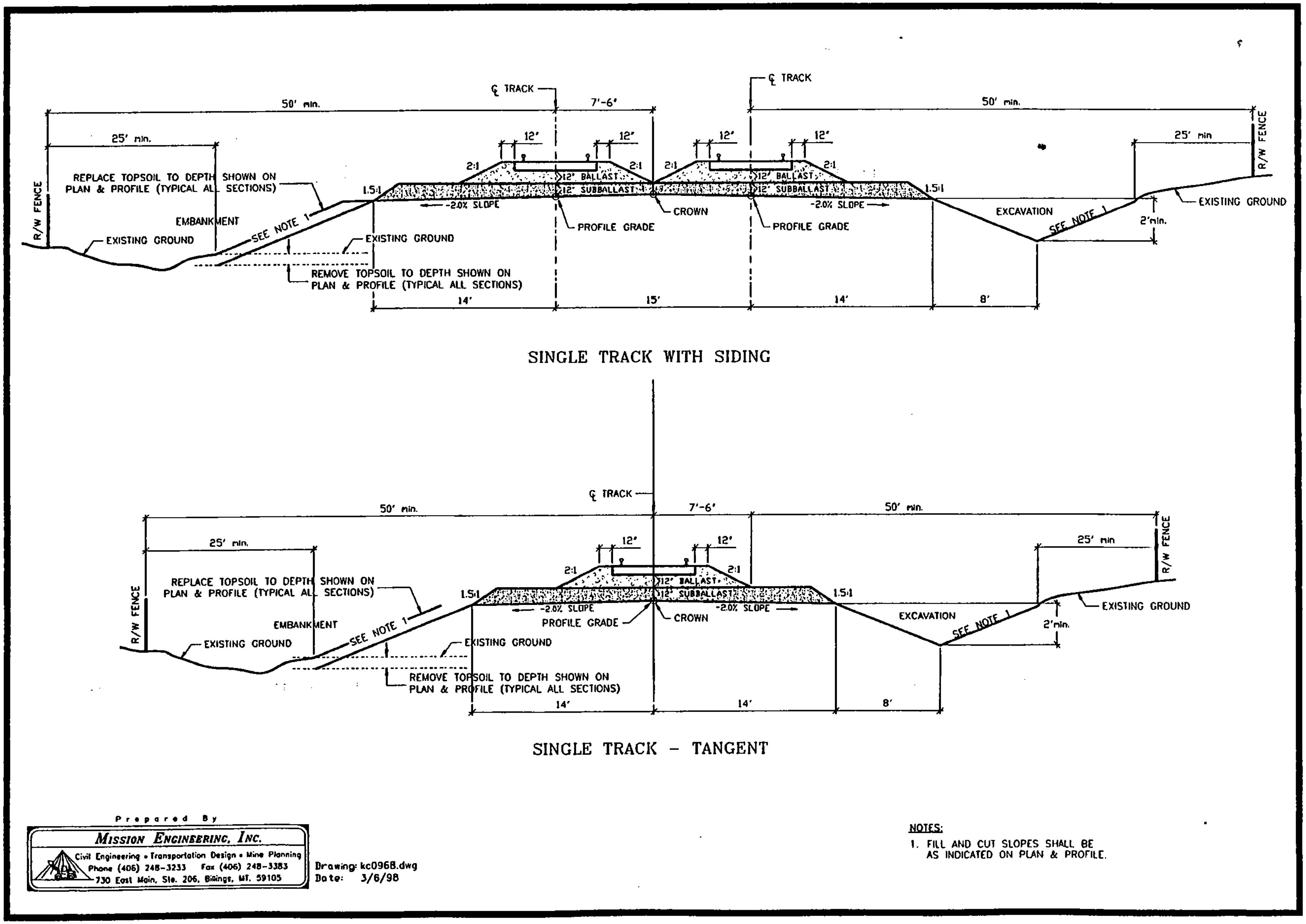


Figure 3-1. Typical Cross Sections of Rail Line

Terminal Facilities

The TRRC may construct new terminal facilities at Miles City. These facilities would consist of buildings for train and engine crews, headquarters operation, limited servicing and maintenance, and maintenance-of-way activities. Whether or not the Miles City terminal facilities are constructed depends upon whether the TRRC and the BNSF reach an agreement that would allow the BNSF to operate over TRRC tracks. A terminal would not be required if such an agreement is reached because the BNSF would operate its own facilities (see Section 3.2.2).

Engineering Survey

Prior to construction, a final engineering survey, including staking of the ROW, will be completed in conjunction with a geotechnical (soils) investigation. The design locations of the centerline, culverts, bridges, sidings, cattle guards, and road crossings will be finalized.

Construction Labor Demand and Housing

For the entire line, the peak construction work force would require 530 persons for construction of the Western Alignment or the Original Preferred Alignment. The Four Mile Creek Alternative would result in a peak workforce of 466 persons for the entire line as would the Original Preferred Alignment.

The Western Alignment is more labor intensive than the Four Mile Creek Alternative because of its greater earth moving (cuts and fills) requirements. The Original Preferred Alignment is more labor intensive because of the multiple bridges and the tunnel. TRRC intends to hire as many construction workers from the local area as possible. For planning purposes, the TRRC assumes that 50 percent of the workforce would come from an approximately 50 mile distance from either end of the line. The remainder would be non-local employees. Most non-local construction workers would live in two construction centers.

The primary construction camp for the entire line will be in or near Ashland on approximately 10 acres to be leased from an area property owner. The camp will include provisions for approximately 200 recreational vehicle (RV) trailer hookups (electric power, water, and sewage connections). The camp will also include a bunk facility and a kitchen, dining room and restroom/showers to serve 200 persons. In total, the camp will house 400 persons (although its capacity will be more than 400 because each trailer could accommodate more than one person). All of the structures will be temporary. No permanent foundations will be required. Solid and sanitary wastes will be collected and transported to a licensed landfill or sewage treatment facility. No disposal will occur on site. Tongue River Electric Cooperative will provide electric power. Approximately 20 persons will be hired from the Ashland area to provide for the cooking, clean up, and camp maintenance.

A smaller (five-acre) construction camp will be located at the southern end of the railroad near the connection with the Spring Creek Mine Spur. It will consist entirely of trailer hook ups for about 100 RVs with a single central facility for restrooms, showers, and laundry. A small convenience store will be located on site. As with the larger camp in Ashland, this complex will not involve the use of permanent structures and will not entail on-site disposal of solid or sanitary wastes. Following completion of the railroad construction, both camp areas will be cleaned up and restored pursuant to agreements with the individual landowners.

Equipment Laydown and Construction Centers

There will be three equipment laydown and construction centers. A 15-acre area to be sited near Miles City, a five-acre area to be sited near Ashland, and a 10-acre area to be sited near the southern end near the Spring Creek Mine spur. These three centers will operate over the period of construction.

The two larger centers at either end of the entire line will contain a track welding shop, engineering and construction offices, materials stockpiling, and fuel and equipment storage. The center near Ashland will be primarily devoted to equipment and fuel storage. Fuel storage and loading will be conducted at bermed sites with impervious cover to avoid groundwater and surface water contamination. Following completion of the railroad construction, these equipment laydown and construction centers will be restored pursuant to agreements with individual landowners.

ROW Purchase and Cleaning

The first requirement in constructing the rail line will be the purchase of the ROW. Once the ROW has been secured and fenced, work will begin with the clearing and grubbing of the construction corridor. When the clearing process has been completed, the installation of livestock passes, culverts, and railroad bridges will begin. There will be livestock passes to allow for passage of cattle across the ROW and under the railroad in the Western Alignment. The final number of these passes will be based on discussions with individual landowners.

Culverts and Bridges

Culverts will be placed according to the final engineering design. Coated with either a galvanized or bituminous coating (not "asbestos-bonded" material), culverts will be designed to safely withstand a 25-year flood peak flow, with one pipe diameter of headwater.

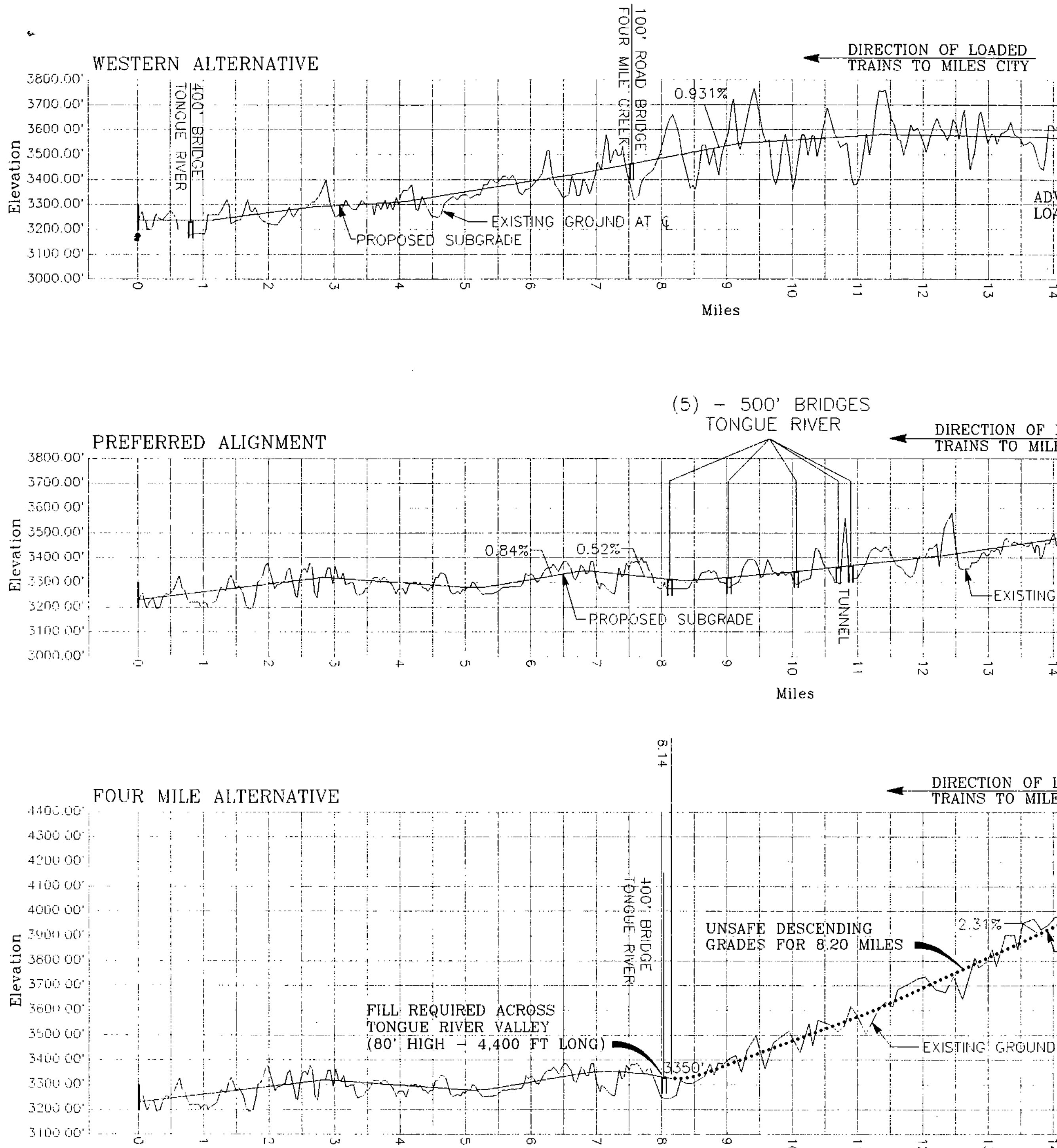
Bridge construction will entail the driving of sheet pilings around the proposed pier locations to provide cofferdams for the placement of the bridge foundations. With foundations and piers in place, prestressed concrete beams will then be set on the piers and abutments to form bridge decking.

Construction of Roads

During construction a road will be built along and within the proposed ROW. Most heavy equipment would be confined to this temporary road. Where the proposed rail line is isolated due to the Tongue River or large parcels of private land, temporary construction access roads, 20 feet in width, may be built. The location of the roads will be negotiated with affected landowners. After construction, the temporary construction roads will be reclaimed.

Earth Moving

The construction of the Western Alignment would involve relatively large quantities of earth moving to accommodate several high fills and deep cuts as the line cuts across side drainages leading into the Tongue River from the west and through ridges between the drainages. The road bed is being planned so as to avoid the need for borrow pits or spoil piles by using the material excavated from the cuts in the fills. Table 3-1 compares the quantity of cut and fill material, the amount of disturbed acreage, and the average slope length for cuts and fills for the Western Alignment and its alternative routes. Although the size of the fills and cuts are greater on the Western Alignment, the total number of acres disturbed is less for the Western Alignment than the Four Mile Creek Alternative although somewhat greater than the Original Preferred Alternative. The location of these cuts and fills for each route can be seen in the grade profile comparisons for each route in Figure 3-2.

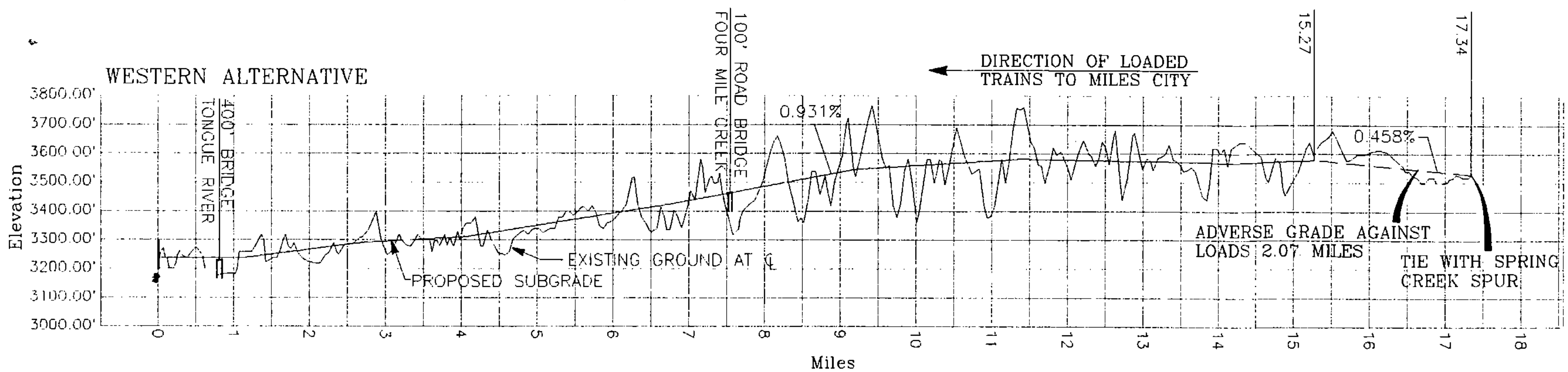


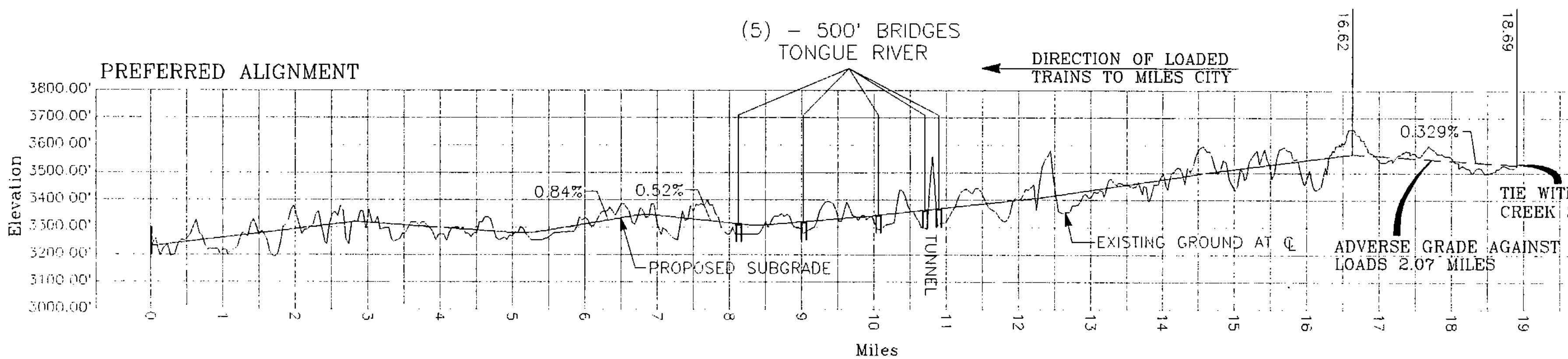
Prepared By

MISSION ENGINEERING, INC.

Civil Engineering • Transportation Design • Mine Planning
Phone (406) 248-3233 Fax (406) 248-3383
730 East Main, Ste 206, Billings, MT. 59105

Drawing: e19008f
Date: 1/20/98


WESTERN ALTERNATIVE
DIRECTION OF LOADED TRAINS TO MILES CITY
400' BRIDGE TONGUE RIVER
100' ROAD BRIDGE FOUR MILE CREEK
0.931%
0.458%
15.27
17.34
EXISTING GROUND AT ℄
PROPOSED SUBGRADE
ADVERSE GRADE AGAINST LOADS 2.07 MILES
TIE WITH SPRING CREEK SPUR
Elevation
Miles


PREFERRED ALIGNMENT
(5) – 500' BRIDGES TONGUE RIVER
DIRECTION OF LOADED TRAINS TO MILES CITY
0.84%
0.52%
0.329%
16.62
18.69
TUNNEL
PROPOSED SUBGRADE
EXISTING GROUND AT ℄
ADVERSE GRADE AGAINST LOADS 2.07 MILES
Elevation
Miles

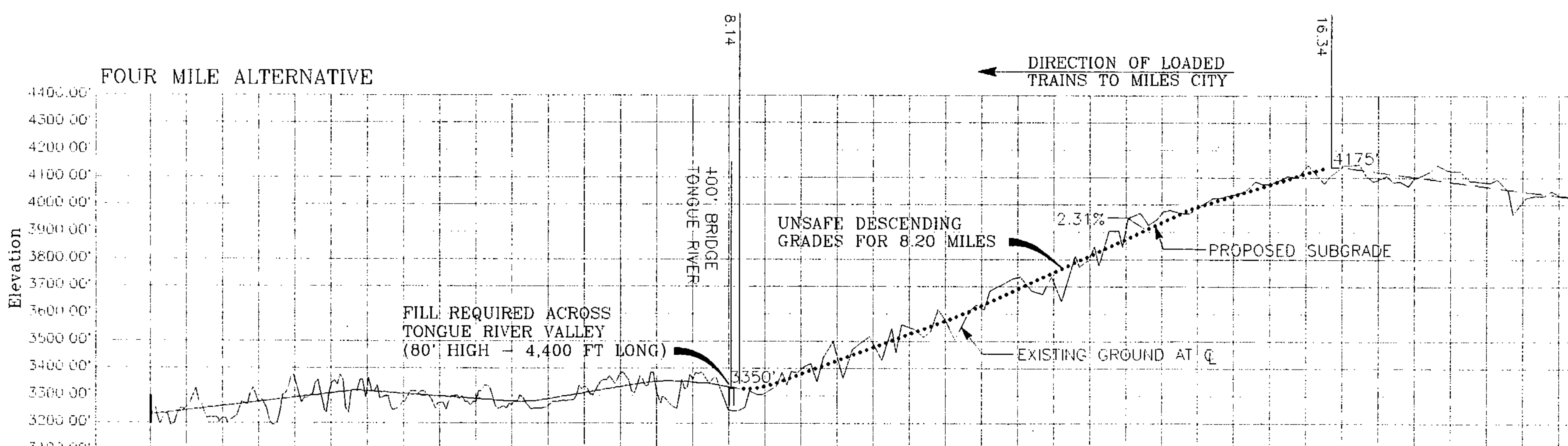

FOUR MILE ALTERNATIVE
DIRECTION OF LOADED TRAINS TO MILES CITY
8.14
16.34
4175
3350'
2.31%
400' BRIDGE TONGUE RIVER
FILL REQUIRED ACROSS TONGUE RIVER VALLEY (80' HIGH – 4,400 FT LONG)
UNSAFE DESCENDING GRADES FOR 8.20 MILES
PROPOSED SUBGRADE
EXISTING GROUND AT ℄
Elevation

Table 3-1. Comparison of Earthwork for Cuts and Fills by Route

	Western Alignment	Four Mile Creek Alternative	Orig. Preferred Align.
Earthwork (cubic yards)	17,309,000	10,360,000	7,768,000
Disturbed acres	364	456	334
Average slope length (ft)	103	71	85

Grading of the track bed would begin with the removal and storage of topsoil. Scrapers, front-end loaders, power shovels, or dozers would be used in the excavation of cut areas. Blasting in the ROW and the casting of material outside the ROW is not anticipated, although charges may be set to fracture material. Scrapers or "belly dumps" would be used to transport material from cut areas to fill areas. Trucks would distribute water along the graded area for dust control and soil compaction.

During construction, best management practices (BMPs) would be employed for temporary erosion control. The various BMPs planned are discussed in Chapter Six. Approximately 20 percent of the slopes will be topsoiled and seeded. The remaining slopes are expected to contain a large amount of rock and clinker which will not support a significant stand of vegetation.

Preparation of the rail bed and reclamation of disturbed areas would be followed by the laying of track for the main line and for passing tracks and sidings. Track laying machines would lay ties and welded track. If required, the terminal facilities at Miles City would be constructed concurrently with the construction of the main track. When the track-laying work is completed, signal and communication facilities would be installed. Ballast placement and final clean-up would complete the construction activity required for the rail line.

General Precautions

During construction, at a minimum, the following precautions will be followed to minimize any potential impacts:

1. Disposal of all construction debris on land to prevent its entry in a waterway or wetland;
2. Operation of equipment for handling and conveying materials to prevent dumping or spilling materials;

3. Placement of all dredged or excavated materials (except for that required for cofferdams, abutments, piers, foundations, etc.) on an upland site above the ordinary high water line to prevent their return to the waterway;

4. Performance of all work in a waterway in a manner to minimize increases in suspended solids and turbidity;

5. Careful handling of petroleum products (gas, diesel fuel, lubricating oil, solvent, etc.), the principal hazardous materials hauled and used during the construction period, to prevent their entry into the water;

6. Limited clearing of vegetation;

7. Reseeding disturbed areas with indigenous vegetation.

Details and additional measures to mitigate environmental impacts are discussed in Chapter Six.

3.2.2 Operation and Maintenance

This section describes operational activities for the entire line, including the Western Alignment. As noted earlier, there are two scenarios associated with the operation of the Tongue River Railroad. One calls for the negotiation of an operating agreement between TRRC and the BNSF whereby BNSF would operate over the Tongue River Railroad with its own crews and locomotives.[1] Each coal train would be comprised of approximately 113 coal cars. Each car would carry approximately 117 tons of coal, for a total train load of roughly 13,200 net tons. Trains would operate every day, 365 days a year. Train frequency would depend upon the amount of coal to be shipped which for purposes of this analysis, is predicted to be six round trip trains per day or 12 train movements per day in the year 2005 over the Western Alignment. Because some Ashland tonnage is expected to be transported by 2005, there will be about seven roundtrip trains per day from the Ashland area to Miles City (see Table 1-2).

If such an operating agreement is not reached with BNSF, a second scenario would be for the TRRC to transport unit trains from the Decker area to Miles City using its own locomotives and crews. The coal train length, weight, and frequency would be the same under both scenarios. Further, TRRC would provide track and ROW maintenance under both scenarios. In either case, the electric utility purchasing the coal would own and maintain the coal cars. Table 3-2 describes

[1]As of April 1998, the TRRC and BNSF authorities were discussing, but had not yet concluded, an operating agreement.

some of the operating variables assuming TRRC operation of the line for the three alternative routes.

Table 3-2. Tongue River Railroad Operations Activities Assuming TRRC Operation Across the Western Alignment and Alternative Routes for Year 2005

	Operational Variable	TRRC Own/Operate Locomotives and Hires Crews		
		Western Alignment	Four Mile Creek Alternative	Original Preferred Alignment
1	Roundtrip trains/day [1]	6	6	6
2	Train movements/day [2]	12	12	12
3	Number of crew [3]	50	60.5	50
4	Total Number of employees [4]	99	109.5	99

[1] Assuming 29.4 million tons in year 2005 across southernmost segment of Tongue River Railroad (McMahan, 1998; Gustafson, 1998).
[2] Each roundtrip train equals two movements: one loaded and one returning unloaded.
[3] Number of crews operating over entire line (adapted from Leilich, 1998).
[4] Total number of employees (administrative, crews, maintenance) for entire line (adapted from Leilich, 1998).

Under the scenario where TRRC operates the line, it is projected that the TRRC would operate six round trip trains per day over the Western Alignment of the Tongue River Railroad resulting in 12 train movements per day in the year 2005. TRRC would use its own crews which would amount to 50 persons. There would be 49 additional persons employed by the TRRC to perform administrative and maintenance functions, for a total of 99 persons.

The additional helper locomotives and crew members required for operation over the Four Mile Creek Alternative result in the need for about eleven additional crew members.

Most of the coal to be carried on the Tongue River Railroad is destined for markets in Minnesota, Wisconsin, Michigan, Washington, northern Illinois, and the Dakotas. Other possible destinations are in Ohio, Pennsylvania, New York, and Canada (McMahan, 1998).

According to the federal regulations (49 CFR 213), the TRRC will be required to maintain the rail line to Class IV Standards to operate safely up to 50 mph. Long term maintenance will be performed according to either terms of the TRRC and BNSF agreement or contracted.

Access to the ROW for the maintenance of the rail line would be confined to public grade crossings or to private grade crossings where access agreements have been made with the landowner. Access for maintenance equipment along the ROW would be provided via the railroad embankment. Maintenance primarily would be accomplished with "High-Rail" equipment traveling along the rail line. Vegetation control along the track area would be undertaken by either mechanical means or by applying herbicides. Only those chemicals approved and licensed by the state of Montana would be used to control trackside weeds.

The TRRC contingency plans for emergencies, including derailments and natural disasters, require the company to identify the location of heavy duty cranes and other re-railing equipment and the estimate of time needed to get the equipment on site. The TRRC also would arrange other emergency procedures with the BNSF and make available maps and access points to state police, local fire departments and other emergency response teams.

3.2.3 Western Alignment—Route Description

The Western Alignment separates from the approved route approximately 20.8 miles from Terminus Point 1 (the starting point for the Extension approved in 1996). See Figure 1-2 in Chapter One. The point, which will be called Milepost 0.0 for purposes of the ER, is approximately nine miles north of the mouth of Four Mile Creek. From Milepost 0.0, the Western Alignment crosses over to the west side of the Tongue River Valley approximately 3,000 feet downstream from the existing county road bridge over the Tongue River. After crossing to the west, the Western Alignment generally parallels the existing Tongue River county road for four miles. At Milepost 5.4, the Western Alignment separates from the county road and continues on a 0.93 percent climb to rise away from the Tongue River Valley.

At Milepost 7.5, the Western Alignment crosses Four Mile Creek drainage with a 100 foot long bridge over the county road. This rail bridge is approximately 0.8 miles west of the approved Tongue River rail bridge for the Four Mile Creek Alternative. From this crossing of Four Mile Creek, the Western Alignment continues south, climbing away from the Tongue River Valley and runs approximately one mile west of the Original Preferred Alignment. By relocating the Western Alignment further west, four river crossings, the proposed tunnel, and 3,650 feet of

Tongue River rip rap are avoided when compared to the Original Preferred Alignment. At Milepost 13.6, the Western Alignment passes approximately one mile west of the Tongue River Dam, and proceeds directly southwest to tie with the existing Spring Creek Mine spur. From Milepost 13.6, the Western Alignment has been located an additional one half mile west of the Tongue River State Recreation Area, as compared to the Original Preferred Alignment.

Using the Western Alignment rather than the Four Mile Creek Alternative, the Tongue River Railroad Extension, approved in 1996 by the STB, would be shortened by 12.1 miles. Moreover, the Western Alignment is 1.4 miles shorter than TRRC's Original Preferred Alignment.

3.2.4 Four Mile Creek Alternative—Route Description

The Four Mile Creek Alternative separates from the Western Alignment at Milepost 0.0 sharing the same route as the Original Preferred Alignment for approximately seven miles. At Milepost 7.7, the Four Mile Creek Alternative separates from the Original Preferred Alignment and at Milepost 7.9 the Four Mile Creek Alternative would include a long fill (4,400 ft) across the Tongue River Valley including an 80 ft high and 400 ft long bridge over the Tongue River. The crossing would require a very large amount of fill (1,084,000 cubic yards).

From the Tongue River bridge, the Four Mile Creek Alternative begins a relatively steep (2.31 percent) climb on the south side of the Four Mile Creek drainage for approximately eight miles. At an elevation of 4175 ft above mean sea level (MSL) the Four Mile Creek Alternative then begins a 13 mile descent to its connection with the Spring Creek Mine spur. Figure 3-2 shows the profiles of each the three alternative routes. The relatively greater length and steeper and longer grades of the Four Mile Creek Alternative are readily apparent. The 8.2 mile grade will be experienced as a descent by loaded unit trains transporting coal from Decker area mines.

3.2.5 The Original Preferred Alignment—Route Description

As its name implies, the Original Preferred Alignment is the routing that TRRC initially proposed to the STB. As discussed above, it was ultimately rejected by the STB in favor of the Four Mile Creek Alignment. Although it is 10 miles shorter than the Four Mile Creek Alternative, involves more gentle grades, and would entail less filling and cutting than the Four Mile Creek Alternative, objections raised to the Original Preferred Alignment related to environmental impacts resulting from the five river crossings, the proximity to bald eagle nesting sites, and proximity to the Tongue River Recreation Area. The Original Preferred Alignment is presented as an alternative in this ER because it serves as a basis of comparison for the currently approved route, the Four Mile Creek Alternative, and TRRC's new proposed route, the Western Alignment.

The Original Preferred Alignment separates from the Western Alignment at Milepost 0.0 and the Four Mile Creek Alignment at Milepost 7.7. As shown in Figure 3-2, this route has five river crossings—each one involving a 500 ft long bridge. The first of these crossings occurs at Milepost 8.1. Between the last two bridges is a 600 ft long tunnel. The tunnel would probably be advanced through the use of a tunnel shield. The excavation would be hand mined or mined through the use of a small excavator followed by the erection of liner plates. The liner plates would be made of steel or precast concrete and would be bolted together in place. The over-excavated area between the liner plates would be filled with grout and provisions made for water infiltration and drainage. Material from the tunnel would be used as fill material. The tunnel would then be faced with concrete.

The route of the Original Proposed Alignment climbs out of the Tongue River canyon following the final Tongue River bridge on a gentle grade of 0.6 percent until Milepost 16.6 where at an elevation of 3570 ft, it begins a relatively gentle descent of 0.33 percent for approximately 2.1 miles where it joins the existing Spring Creek rail spur.

3.3 Summary Comparison of Western Alignment and Alternative Routes

Table 3-3 below provides a summary that compares the anticipated effects of the Western Alignment, the Original Preferred Alignment and the Four Mile Creek Alternative. Chapter Four provides a detailed description of the anticipated environmental effects.

3.4 No-Build Alternative

As required by the STB regulations implementing NEPA, the applicant must describe the "no-build" alternative [49 CFR 1105.7(e)(11)(ii)]. In this instance, the no-build alternative could be two different scenarios.

First, a no-build alternative could be the failure to construct the Tongue River Railroad at all. This would occur if TRRC chose not to use its existing STB authorization to construct the Miles City-to-Decker rail line. As stated in the 1992 DEIS (ICC, 1992), the Supplemental DEIS (ICC, 1994) and the FEIS (STB, 1996a), this no-build alternative would preserve the status quo and would be environmentally neutral. None of the environmental impacts discussed in this ER (including social and economic benefits) would occur. The present movement of coal from the

Decker area would be unaffected and would continue to be transported along the existing, more circuitous BNSF line which now serves Powder River Basin. However, coal from potential mines in the Ashland area would not be mined or transported if the Tongue River Railroad is not built.

Second, a no-build alternative to the Western Alignment could be construction of the already STB-approved Miles City-to-Decker rail line via the Four Mile Creek Alternative. As described throughout this ER, this no-build would result in greater environmental impacts as well as increased operational risks and costs compared to the Western Alignment.

3.5 Related Actions (and indirect impacts)

Related actions are projects or activities that would not occur in the absence of the proposed action but are not directly linked to the proposed action. The effects associated with related actions are called indirect impacts. The principal related action associated with the *entire* Tongue River Railroad is the increased potential for opening up one or more surface coal mines in the Ashland area. These effects have been evaluated in the 1985 TRRC EIS for the 89-mile segment of the Tongue River Railroad connecting Ashland with Miles City.

The opening of the Ashland area mines is not a related action for the construction and operation of the Western Alignment (i.e., the Proposed Action for this present ER) because the TRRC is already authorized to construct and operate the Tongue River Railroad from Miles City to Ashland (and indeed to Spring Creek Mine spur via the Four Mile Creek Alignment). Thus, there are no related actions associated with the Proposed Action.

Table 3-3. Comparative Summary Impacts Table

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Land Use			
Irrigated farmland in use (a)	3.2	2	2.7
Irrigated farmland not in use (a)	3.8	2	2.3
Non-irrigated farmland (a)	4.9	33.6	0
Recreational property (a)	0	0	31
Other range land (a)	456	599	411
Total ROW acquisition (a)	468	636	447
Total number of landowners affected (a)	13	15	16
Social and Economic			
Construction labor employment (b)			
Peak requirements	530	466	530
Direct plus indirect employment	716	629	716
Annual direct construction wages (b)	$27.1 M	$23.8 M	$27.1 M
Construction expenditures locally (a)	$17.7 M	$23.8 M	$22.9 M
Increase in regional population as a result of construction (excludes those living in construction camps) (b)	100	92	100
Railroad operations direct employment changes in region (initial year): (c)			
Gains from TRRC hiring	80	91	80
Losses from BNSF crews	87	87	87
Net gain/loss in jobs	-7	+4	-7
Railroad operations direct wage changes in region (initial year): (c)			
Gains from TRRC hiring	$3.2 M	$3.7 M	$3.2 M
Losses from BNSF crews	$7.5 M	$7.5 M	$7.5 M
Net loss in regional wages	$4.3 M	$3.8 M	$4.3 M
Increase in Taxable Value (government and schools) (d)			
State of Montana (b)	$19.9 M	--	--
Rosebud County (b)	$ 10.9 M	--	--
Custer County (b)	$ 7.8 M	--	--
Big Horn County (b)	$ 1.2 M	--	--
Transportation			
Number of public rail/roadway crossings (a)	4	6	5
Number of private rail/roadway crossings (a)	12	18	15
Vehicle delays due to TRRC trains, 2005			
Number of delayed trips per day S566/S314 (a)	2/25	2/25	2/25
Percentage of trips delayed (%) S566/S314 (a)	< 2/4.5	< 2/4.5	< 2/4.5

Table 3-3. Comparative Summary Impacts Table (continued)

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Safety			
TRRC trains (year 2005)			
Total grade-crossing accidents per year (a)	< 1	< 1	< 1
Total derailments per year (a)	0.27	0.46	0.29
Energy			
Annual fuel consumption (gallons) for locomotives (b)	4.67 million	7.15 million	4.71 million
Tongue River Dam			
Nearest location to rail line (miles) (a)	1	2	1
Soils and Geology			
Earthwork volumes (cu yds) (a)	17.3 million	10.4 million	7.8 million
Disturbed acres (a)	364	456	334
Ave. slope length (a)	103	71	85
Erosion (tons/yr) (a) (f)	12,750	11,278	9,583
Hydrology and Water Quality			
Possible wetland impact locations (a) (e)	2	4	8
Water usage during construction (a)	1,328 acre feet	597 acre feet	795 acre feet
Average annual increase in TSS (mg/L) (a) (f)	11	6	9
Aquatic Ecology			
Number of non-perennial stream crossings	42	40	37
Number of perennial stream crossings	0	0	0
Number of river crossings	1	1	5
Terrestrial Ecology			
Vegetation and wildlife habitat lost due to the right-of-way (acres)	364	456	334
Air Quality (emissions in tons per mile per year)			
Short-term fugitive dust emissions from construction activities (a) (f)	86.7	108.8	79.7
Short-term construction combustion emissions (a)			
Carbon monoxide	4.23	1.49	1.76
Oxides of nitrogen	12.94	4.56	5.37
PM_{10}	1.37	0.48	0.57
Sulfur dioxide	1.56	0.55	0.65
Volatile organic compounds	0.95	0.33	0.39

Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	TRRC Original Preferred Alignment (18.7 miles)
Long-term locomotive combustion emissions (b) (g)			
Carbon monoxide	1.37	2.10	1.38
Oxides of nitrogen	13.9	21.3	14.0
PM_{10}	0.34	0.53	0.35
Sulfur dioxide	0.73	1.12	0.74
Volatile organic compounds	0.51	0.79	0.52
ROW - Fugitive dust (a) (f)	1.03	0.82	0.91
Noise			
Sensitive receptors (a)			
500-foot construction contour	1	7	3
2,000-foot construction contour	6	7	7
70-dBA contour	0	0	0
65-dBA contour	0	0	1
55-dBA contour	7	12	9
Cultural Resources			
Known sites within 100 feet of the centerline (a)	1	1	3
Known sites within 1,500 feet of centerline (a)	10	8	24

Notes:

(a) Data apply to southernmost portion of Tongue River Railroad (Proposed Action and alternative routes) only, not the entire Decker-to-Miles City line.

(b) Data apply to entire Tongue River Railroad (Decker-to-Miles City).

(c) TRRC estimates that 80 full-time employees would be hired in the initial year of operations for the Western Alignment. The loss of 87 BNSF crew member jobs is based upon TRRC operations. If TRRC and BNSF reach an operating agreement, the loss of BNSF crew would likely be much less. Wages are assumed to be $86,000 per year for each BNSF crew member including benefits. Total TRRC wages and fringe benefits are $3.2 million in the initial year of operations via the Western Alignment (Leilich, 1998).

(d) Based on capital construction costs for the entire TRRC rail line from Miles City to the Decker Area of $295 million via the Western Alignment; $286.7 million via the Four Mile Creek Alternative, and $279.2 million via the Original Preferred Alignment.

(e) Possible wetland impact locations include wetlands and "waters of the U.S." regulated by Section 404 of the U.S. Clean Water Act.

(f) Before mitigation (i.e., worst case).

(g) Data are in tons per mile per year and apply to the entire Tongue River Railroad (Decker to Miles City) which is conservatively estimated at 100 miles.

Chapter Four

CHAPTER FOUR

4.0 Impacts of the Proposed Action and its Alternatives

Chapter Four examines the impacts associated with the construction and operation of the Western Alignment and its alternative routes.

4.1 Land Use

Construction of the TRRC Western Alignment or other alternatives would affect existing land use in the project area. Lands would have to be acquired for the right-of-way (ROW) and would be lost to its present use. Other lands would be intersected by the rail line and could experience a change in highest and best use differing from existing use. Some of the potential impacts would be of short term duration, such as acquisition for construction staging and work camps. Other impacts would be longer term in nature, such as those acquired for ROW. This section presents an analysis of land use impacts for both construction and operation of the Western Alignment, Four Mile Creek Alternative, and Original Preferred Alignment. Table 4-1 presents a breakout of land use and ownership acreage within the ROW of the three routes.

4.1.1 Construction

Including construction staging, work camps, and ROW, total acreage requirements for each alternative and its respective land use category are detailed in Table 4-1. The Four Mile Creek Alternative would result in significantly more ROW purchase than the other two routes. Although the Western Alignment is shorter than the Original Preferred Alignment, the former requires slightly more ROW because of its higher cut and fill requirements.

Public land ownership is split between the State of Montana and the Federal Bureau of Land Management. Much of these lands are leased to private parties for agricultural purposes. As described in Chapter Two, the private lands are principally devoted to agriculture.

Severed Parcels

Construction of the Tongue River Railroad could affect land use in the project area by severing land parcels. Severance is defined as the railroad ROW traversing a contiguous land parcel in such a manner as to render portions of the parcel unsuitable for continued current use. Unirrigated grazing land where cattle passes can be installed to allow the uninterrupted movement of cattle between pastures is not considered to be severed. Ranchers have noted that cattle may be reluctant to use cattle passes, especially those that are used infrequently. This situation may increase the time taken to herd cattle between pastures. The use of holding pens at the cattle passes may help to mitigate this impact.

Table 4-1. Land Ownership and Land Use in ROW for Proposed Action[1] (in acres)

Land Use Category	Western Alignment (17.3 miles)	Four Mile Creek Alternative (29.4 miles)	Original Preferred Alignment (18.7 miles)
Landowners Affected by ROW	13	15	16
Total ROW	468	636	447
Public Land	56	57	18
Private Land	412	579	429
Rangeland	456	599	411
Non-Irrigated Farmland	4.9	33.6	0
Irrigated Farmland In-Use	3.2	2	2.7
Irrigated Farmland Not In Use	3.8	2	2.3
Recreation	0	0	31

[1] Does not include construction work camps and laydown areas where temporary ROWs will be purchased.

Irrigated cropland, employing mechanical irrigation systems, represents the most important type of cropland that could experience severance. None of the proposed alternatives will sever irrigated lands served by mechanical systems. All the affected cropland under all scenarios is presently irrigated by gravity flow systems. The TRRC has agreed to construct any culvert required to continue the flow of ditches crossed by the ROW.

An estimate of severance and average land value for each proposed alignment is not provided in this report because the analysis for each landowner is unique. TRRC will work with real estate professionals and the landowners to appraise the affected property. This process includes interviewing the landowner, determining impacts, and analyzing data for a determination of value. Each appraisal is unique being based on the affected parcel's water supply, capital improvements, and inconveniences which include livestock and equipment movement.

Displacement of Capital Improvements

The route of the proposed extension alternatives traverses grazing lands bordering the valley bottom land. Consequently, it is not expected that any of the proposed routes will displace many capital improvements. In the appraisal process, displacement of capital improvements will be assessed for each affected landowner. After determining that capital improvements such as outbuildings, fences, or other properties are affected by any of the proposed routes, TRRC will work with the landowners to relocate or remunerate for displaced capital improvements. Note that no mechanical irrigation systems would be impacted by the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment.

Effect on Agricultural Productivity

The total amount of irrigated, agricultural land that is currently in use and will be taken out of production by the construction of the proposed alternatives, as shown in Table 4-1, is estimated at 3.2 acres for the Western Alignment, two acres for the Four Mile Creek Alternative, and 2.7 acres for the Original Preferred Alignment, respectively.

None of the three routes would significantly affect prime farmlands. Based on discussions with the Natural Resources Conservation Service (formerly Soil Conservation Service), the only soils with a potential for prime farmland status is irrigated farmland. As shown in Table 4-1, the potential amount of irrigated farmland to be lost to ROW acquisition ranges from four acres for the Four Mile Creek Alternative to seven acres for the Western Alignment.

Impacts to Recreation Areas and Other Land Uses

The principal land use in the proposed project area is agricultural rangeland. However, there are two other land uses: recreation and second-home subdivision sites that could also be affected by the Proposed Action or its alternative routes.

As discussed in Section 4.12 and depicted in Figure 4-5, construction of the Western Alignment would place the ROW between one and two miles from public camping areas at the Tongue River Reservoir State Park (Sand Point, Peewee Point, Campers Point, and Rattlesnake Point). Also, the railroad would be constructed in cuts throughout most of this area which would provide both a visual barrier and sound buffer from these popular camping areas. The Western Alignment would not affect the Cormorant Estates.

The Four Mile Creek Alternative would avoid the Cormorant Estates and be farther from the Tongue River Reservoir State Park. In contrast, the Original Preferred Alignment would cross parts of both the Tongue River Reservoir State Park and Cormorant Estates property. The Original Preferred Alignment would require acquisition of approximately 23 acres of land lying within the State Park. Additionally, the road providing access to the recreation area and reservoir shoreline, would be crossed at several locations. The severance would affect access to the park. The TRRC would mitigate this impact by realigning the country road as required. Construction of the Original Preferred Alternative would also impact two of the 16 tracts at Cormorant Estates. This proposed alignment would extend across roughly 0.5 miles of the area and would require the acquisition of approximately eight acres. It is possible that presence of the railroad through or near these recreational home sites could reduce the market value of the individual tracts.

The construction of the Western Alignment (or its alternative routes) would not disturb any known permitted or unpermitted waste disposal sites or areas of existing contamination. Similarly, neither the Proposed Action nor its alternative routes would interfere with any remediation plans related to any such areas.

4.1.2 Operation and Maintenance

Ranchers have expressed particular concern over several aspects of railroad operations (STB, 1996a):

- The railroad's potential interference with access to their ranch (addressed in Section 4.3, Transportation);
- The possibility of train-caused wildfires;
- The propagation of noxious weed by passing trains; and
- Trespass.

The issue of railroad-caused range fires has been frequently raised by those in opposition to the Tongue River Railroad. However, review of the most recent statewide fire data from the Montana Department of State Lands (MDSL) indicates that lightning strikes caused the greatest number of fires (47.8 percent) over the 10-year study timeframe (1981-1991). Burning of debris by landowners was second (11.7 percent). Rail operations only accounted for 5.4 percent, ranking behind powerline sparks and "other equipment." MDSL data indicate that the typical railroad-caused wildfire affects four to five acres (MDSL, 1991).

The TRRC recognizes that any fire could be disastrous for the individual landowner. It previously has agreed to develop a fire prevention and suppression plan for the railroad in accord with accepted fire prevention practices for railroads. The prevention part of the plan would include the adequate maintenance of rolling stock and locomotive power.

The suppression aspect of the plan would include an identification of access points along the alignment and the location of grade crossings and gates at key locations, where access may now be a problem (ICC, 1992, A-11). The plan also would include an evaluation of existing fire suppression equipment in the area, along with expected response times. In discussions with local landowners, the TRRC may also negotiate the placement of fire suppression equipment at strategic area ranches, which would not only assist in the suppression of train-related fires, but would markedly improve the state of existing fire-fighting equipment now available to area ranchers.

Ranchers have also expressed concern about the propagation of weeds along the ROW. Weeds can reduce crop production and can be a fire hazard. The TRRC plans to develop a weed control program that will include both mechanical contact and herbicide application. Only those chemicals approved and licensed by the State of Montana will be used to control trackside weeds.

Finally, ranchers have noted that the presence of a ROW adjacent to their lands can offer opportunities for trespass. Given the isolated nature of the upper Tongue River Valley, trespass would principally be a problem during construction of the railroad. Liaison between landowners and railroad construction personnel should be sufficient to identify and solve trespass problems that arise. After construction of the ROW is complete, access to the ROW would be limited to railroad maintenance employees; consequently, trespass problems should not occur.

4.2 Social and Economic

4.2.1 Introduction

This section draws upon the socioeconomic impact evaluation conducted for the five county area in the DEIS for the proposed Tongue River Railroad Extension (ICC, 1992) and provides more project area-specific analyses for the Western Alignment and its alternatives.[18]

---

[18] Unlike most of the other sections of this chapter, this discussion of social and economic impacts is sometimes (continued...)

Updated project cost data are used where available. Section 4.2.2 examines the social and economic impacts of railroad construction in terms of direct and indirect employment and impacts on local services and infrastructure. The issue of cumulative impacts of the construction of Tongue River Railroad and construction for the rehabilitation of the Tongue River Dam Reservoir are also addressed. Section 4.2.3 addresses the impacts of railroad operations. Section 4.2.4 addresses environmental justice in response to new requirements that NEPA documents analyze the potential for disproportionately adverse impacts to racial minorities and the poor.

4.2.2 Construction

The construction of the Tongue River Railroad will have a positive socioeconomic impact to the region and local area through the creation of construction jobs, through purchases of equipment and material from local vendors, and indirectly from the secondary job creation. However, the construction labor requirements raise the potential of creating temporary (two to three years) demands on limited local services. These issues are discussed in this section.

Direct Employment

Construction of the Tongue River Railroad would require three years. The construction work would proceed year round, depending upon weather. It is assumed that most of the construction would occur over a seven month period (April - October) of each year. Table 4-2 shows the estimated demand for labor requirements for the entire line depending upon which route is selected for the southernmost portion of the railroad.

The construction labor requirements for the Western Alignment and the Original Preferred Alignment are similar and both are greater than what would be required for the Four Mile Creek Alternative. The Western Alignment labor requirements are high relative to the Four Mile Creek Alternative's because of the large amount of earthwork; the Original Preferred Alignment's requirements are relatively high because of the large number of bridges and the tunnel construction.

---

[18](...continued)
directed at an area much larger than the immediately adjacent areas around the Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment. There are three reasons for this. First, social and economic impacts often affect a larger area (e.g., property tax revenues benefits school children in Colstrip and Forsyth). Secondly, the data on social and economic conditions are collected, aggregated, made available, and updated on areal units that go beyond the area immediately around the railroad. Thirdly, the TRRC engineers planning is being developed for the entire railroad.

Table 4-2. Estimate of Average Construction Labor Requirements by Year and by Route

	Western Alignment	Four Mile Cr. Alt.	Orig. Pref. Alignment
First Year	480	413	480
Second Year	530	466	530
Third Year	480	423	480

Source: Mission Engineering, 1998.
Note: These estimates are for total line construction.

It is the intention to hire as many workers from the local area and surrounding region as may be available. Estimates are that a portion of the 70 workers required to operate the highly specialized track laying equipment may not be available locally. The great majority of the remaining workers can easily be trained or require minimal training for their responsibilities. For planning purposes, the TRRC assumes that about half of the workforce will come from the five county region and Billings (although as noted above this figure could be much higher depending upon local labor availability).

Table 4-3 is a projected breakdown of the employment by community based on approximately 50 percent of the peak labor force being provided locally (266 persons) and based upon the assumed community-specific percentage estimates of labor pool contributions. This projection indicates that the more labor-intensive Western Alignment and Original Preferred Alignment routes would result in approximately 30 more local hires than would the Four Mile Creek Alternative.

It is anticipated that most of the employees that would be hired locally would commute to and from their homes to the work site each day. This is especially true of those whose commute times are between 60 and 90 minutes (e.g., Ashland workers for the entire route, Miles City workers for the northern half and Sheridan area workers for the southern half). These workers would have the option of receiving travel allowances for their commute or living in the construction camps at either end of the proposed line. The workers that would be hired from outside the local area would most likely elect to live in either of the two construction camps although they would have the option of renting lodging in Miles City or Sheridan where available housing exists.

Table 4-3. Estimate of the Breakdown of Area Construction Employment (peak demand) by Community

	Regional Labor Pool Percentage	Western Alignment	Four Mile Crk Alt	Original Pref. Alignment
Miles City	25	66	58	66
Sheridan/Decker	25	66	58	66
Billings	10	27	23	27
Broadus	10	27	23	27
Forsyth	10	27	23	27
Hardin	10	27	23	27
Lame Deer/Crow Agency	5	13	12	13
Ashland	5	13	12	13
Total	100	266	232	266

Source: Mission Engineering, 1998; ICC, 1992

As described in Chapter Two, there will be a primary construction camp in or near Ashland and a smaller one with trailer hookups, shower, laundry, and commissary facilities on the south end of the line.

Impacts of Construction Camps

The construction centers will be self-contained, thus minimizing impacts to the local areas. The construction centers will supply laundry, bathing, and food service facilities and will have their own water, power, and waste facilities. TRRC will assure that sufficient housing/trailer facilities and accompanying support facilities are in place prior to beginning construction activities and for all phases of the construction period. The facilities will comply with all applicable state and local regulations.

Because the construction centers will be self-contained with all wastes disposed of off-site in permitted sanitary wastewater and refuse disposal facilities, and because these centers will be removed and the land restored following construction, the environmental impacts of the centers will be minimal and temporary.

Impacts to the Local Economy

At an average monthly salary of $3900 (TRRC, 1998), the annual construction wages during the second (peak) year of construction for the entire line are estimated to be $27.1 million for the Western Alignment.[19] This compares to $23.8 million for the Four Mile Creek Alternative and $27.1 million for the Original Preferred Alignment. Based on the assumption that half of the construction work force can be supplied locally, approximately half of these wages would go to local workers. Table 4-4 estimates the distribution of annual wages among various communities by route selection.

Table 4-4. Distribution of Local Annual Construction Wages Among Communities (millions of dollars)

	Western Alignment	Four Mile Creek Alt	Original Preferred Alignment
Miles City	$3.379	$2.969	$3.379
Sheridan/Decker	$3.379	$2.969	$3.379
Billings	$1.382	$1.178	$1.382
Broadus	$1.382	$1.178	$1.382
Forsyth	$1.382	$1.178	$1.382
Hardin	$1.382	$1.178	$1.382
Lame Deer/Crow Agency	$0.656	$0.614	$0.656
Ashland	$0.656	$0.614	$0.656
Total for Local Workers	$13.668	$11.878	$13.668

Source: TRRC and Granite Construction, 1998.
Assumes labor hiring breakdown from Table 4-3 and $51,200 average annual construction wages and Year 2 average employment levels.

The influx of a large number of non-local workers could create some economic dislocations, such as the temporary shortage of goods and services. However, on an area wide basis, the non-local construction workers are unlikely to alter the economic environment markedly, due to their residence in the self-contained construction centers. The increased demand for local labor, caused by the railroad construction, could create a short-term reduction in the ranch labor pool utilized by some of the project area ranchers. Not only could the availability of

[19] The TRRC estimates that the average monthly pay for a construction worker will be $3900 exclusive of benefits and travel/lodging pay or other benefits. With an additional 75 percent for these benefits and assuming that this pay would only be sustained for a period of 7.5 months because of limiting weather conditions, the average annual gross pay of a construction worker is assumed to be $51,200.

labor be reduced, but the cost of obtaining labor could increase, because ranchers might be forced to pay higher wages to compete with those wages offered by the construction companies.

Construction activities would provide an additional economic stimulus to the region through the purchase of goods and services from local vendors. Table 4-5 provides an estimate (by route selected) of the percentage and total dollar value of materials purchased from the three communities with the capability to provide these supplies: Billings and Miles City, Montana and Sheridan, Wyoming. These data are for the southern portion of the line only, not the entire line. As shown in Table 4-5, all trackage and some bridge materials will have to be purchased out-of-region because they are not available locally. Approximately, 60 percent of all of the materials will be purchased in the region. To a large extent, supplies and materials will be purchased from the nearest location. Thus, relatively more fuel and building supplies will be purchased from Sheridan, Wyoming than from Miles City for this southernmost segment of the line. Table 4-5 estimates non-labor construction costs for the Western Alignment only (i.e., excludes that portion of the railroad north of Milepost 0.0 south of Birney). Because the non-labor construction costs are more for the Four Mile Creek and the Original Preferred Alignment for the reasons discussed below, regional purchases, and their attendant benefits would also be more for these two alternatives.

Total regional purchases (Mission Engineering, 1998) by route are as follows:

Western Alignment	$ 17.7 million
Four Mile Creek Alignment	$ 23.8 million
Original Preferred Alignment	$ 22.9 million

Although the Western Alignment costs more to construct in total because of the labor intensive earthwork, the non-labor construction costs are somewhat less because of the bridges on the Original Preferred Alignment and the additional trackage on the Four Mile Creek Alignment.

In addition to direct employment, the construction of the Tongue River Railroad will generate additional employment as a result of the increased spending by TRRC for materials and supplies and, to some extent, by construction workers for food, entertainment, clothing, and fuel for personal vehicles in the local communities. It is estimated that there will be approximately 20 persons hired from the local area to help with the cooking, clean up, maintenance, and operation of the primary construction camp in Ashland. A few persons may also be hired for

Table 4-5. Projected Railroad Non-Labor Construction Expenditures by Location of Expenditure for the Proposed Action (Western Alignment)

Item	Billings		Miles City		Sheridan		Out of Region		Total
Fuel	20%	$951,013	40%	$1,902,026	40%	$1,902,026	0%	$0	$4,755,065
Major structures	40%	$548,000	10%	$137,000	10%	$137,000	40%	$548,000	$1,370,000
Cattle passes, culverts & vehicle underpasses	90%	$2,594,221	0%	$0	10%	$288,247	0%	$0	$2,882,468
Slope protection, seeding, mulching, ROW fencing	20%	$80,244	30%	$120,366	50%	$200,610	0%	$0	$401,220
Track materials	0%	$0	0%	$0	20%	$1,633,627	80%	$6,534,509	$8,168,137
Cattle guards	20%	$32,160	30%	$48,240	50%	$80,400	0%	$0	$160,800
Totals		$4,205,639		$2,207,632		$4,241,910		$7,082,509	$17,737,690

Source: Mission Engineering, 1998.

Note: These costs are only for the final 17 miles on the south end of the entire line (i.e., Western Alignment).

operations and maintenance of the trailer camp near the southern end of the line. Typically, a multiplier effect of 50 percent (i.e., one indirect job for every two direct jobs) would apply to a large multi-year construction effort (Montana Dept. of Labor and Statistics). Given the high degree of self containment in the construction camps and the assumed 50 percent non-local hiring, a multiplier of 35 percent may be more reasonable for indirect employment stimulation. See Table 4-6.

Table 4-6. Direct and Indirect Employment Due to Construction of the Tongue River Railroad

Route	Direct (Peak Year)	Indirect[1]	Total New Employment
Western Alignment	530	186	716
Four Mile Creek Alternative	466	163	629
Original Preferred Alignment	530	186	716

[1] Assumes 35 percent multiplier.

The construction impacts of increased direct and indirect employment together with the materials and supply purchases will benefit population centers throughout the region (including Billings). For the ranchers and part time residents (seasonal and recreational), the economic benefits are mixed. On the one hand, the loss of range land, the inconvenience of severed parcels, and the reduced short-term availability and higher cost of ranch laborers (who may elect to work on railroad construction), will all be a negative economic impact, as will the reduced real estate value of the few homes directly adjacent to the railroad. The Western Alignment would affect fewer such homes than would the other two alternative routes.

However, offsetting this, to some extent, will be payments to landowners received from the TRRC for the purchase of ROW, purchase of water rights for use in construction, lease of land for construction centers and equipment laydown areas, and the possibility of reduced property taxes that could occur as more of the tax revenues for local governments shift from property owners to the railroad and new coal mines. No attempt has been made to balance these offsetting economic impacts.

Demand for Services

The potential for strains on the services and infrastructure in this thinly populated region exist if the region (particularly small towns like Ashland and Lame Deer) were to host hundreds of new temporary residents. This would occur if a large portion of the demand for direct and indirect employment created by the Proposed Action were to be satisfied by individuals and families migrating from outside the region. Two factors mitigate against this. One is the existing high unemployment levels, particularly on the Northern Cheyenne Indian Reservation. The other is the housing of employees from outside the region in the two self-contained construction centers.

Of the total of 265 employees estimated to be directly hired from outside the region for the entire line with the Western Alignment, approximately 90 percent or 240 will reside in the construction centers. It is assumed that the remaining 25 will seek to rent apartments or homes, primarily in either Sheridan or Miles City. Of these that do not live in the construction centers, approximately 20 will bring their families with them. Assuming one spouse and two children, the new temporary population resulting from the direct employment would be 80 with most living in Miles City or in Sheridan.[20] Also, some of the indirect employment demand may be met by newcomers to the community. However, these indirect jobs will pay less and are more likely to be filled by those seeking part-time service jobs such as teenagers. Therefore, it is unlikely that the short term increases in indirect employment will attract any newcomers to the community. The total increase in new population for the region is estimated to range from 92 to 100 depending upon the route selected. This estimate is shown in Table 4-7.

Table 4-7. Predicted Temporary Increase in Regional Population As a Result of Construction

	Western Alignment	Four Mile Creek Alternative	Original Preferred Alignment
1) Construction Worker Outsiders Residing in Construction Centers	240	210	240
2) Construction Worker Outsiders Seeking to Locate in the Region	25	23	25
3) Dependent Family Members Of Outside Construction Workers Seeking to Locate in the Region	75	69	75
Total (Outsiders temporarily moving into local communities) (2 & 3 above)	100	92	100

[20] TRRC and its construction planning consultant, Granite Engineering, believe that it is unlikely that the out-of-region construction workers would bring their families with them. This estimate is therefore a high (conservative) estimate for purposes of impact assessment.

The estimated 100 person increase in population in the region comprises less than two-tenths of one percent of the five county regional population, which, as shown in Chapter Two is expected to exceed 64,000 in the year 2000. It is unlikely that this incremental increase of 100 new persons will adversely impact the infrastructure and social conditions in the region.

As noted in Chapter Two, this region has pockets of high unemployment (largely Native Americans) and has average family incomes half that of the average construction pay projected for the Proposed Action. Given these facts, it is clear that the socioeconomic benefits of the Proposed Action far outweigh any impacts from increased demands on local services. The net benefits are higher for the Western Alignment and the Original Proposed Alignment than for the Four Mile Creek Alternative because of higher labor requirements.

Cumulative Impacts of Construction

A cumulative impact is an impact from a project or activity that is separate from the project being evaluated but could act to magnify project impacts. In the FEIS (ICC, 1996) for the Tongue River Railroad extension, there was concern that labor demands for the Tongue River Railroad and the strains on local services and infrastructure would be exacerbated because of simultaneous demand for labor for the rehabilitation of the Tongue River Dam. However, delays in beginning construction on the railroad combined with on-schedule construction of the dam rehabilitation have eliminated this as an issue. In fact, the timing of the two projects is now a positive socioeconomic impact (rather than a negative cumulative impact) because it provides some measure of continuity in construction work for local workers.

4.2.3 Operation and Maintenance

The long-term social and economic impacts of the operation of the Tongue River Railroad are based primarily upon two factors: (1) the net effect of the rail line on area and regional employment and wages, and (b) the fiscal impacts of the proposed rail line on revenues to local governments to fund education and basic services.

The section entitled "Impacts on Employment and Wages" below examines the impacts of rail operations on local employment and wages as a function of whether or not the BNSF and the TRRC reach a trackage rights agreement, and as a function of which route is selected for the southernmost segment of the line. The section entitled "Regional Fiscal Impacts from Taxes" presents a recent analysis of fiscal impacts of the Tongue River Railroad on state and local taxation jurisdictions.

Impacts on Employment and Wages

This section examines the impacts of the operation of the Tongue River Railroad on area rail employment and wages. Two operating scenarios are possible. The first is for the TRRC to transport unit coal trains between the Decker area and Miles City using its own locomotives and crews. The second scenario is for the BNSF to use its own locomotives and existing crews to operate over the Tongue River Railroad according to terms of an operating agreement negotiated between the BNSF and the TRRC. As of April 1998, the TRRC and BNSF were discussing such an agreement.

Employment Changes

Under either operating scenario there will probably be a reduction in the use of BNSF crews because BNSF trains carrying coal from the three Decker area mines and Wyoming to markets in the upper midwest will be rerouted over the much shorter Tongue River Railroad. The largest reduction in operating BNSF crew requirements would occur under the first scenario—TRRC operation (i.e., no operating agreement between the two companies). The BNSF crew reductions are likely to be less if BNSF operates the Tongue River Railroad trains. (Some BNSF crew members on trains operating over the existing, more circuitous route from Sheridan to Miles City would presumably become crewmembers on the trains operating over the Tongue River Railroad.)

This section examines the net effect of the TRRC operating scenario on regional rail operating employment and wages because this is the worst case scenario for BNSF job losses. The net effect of this scenario involves a determination of the number of new jobs created by the TRRC and the number of BNSF jobs lost. The same method is used to calculate wage gain and loss.

This section considers employment changes in the initial year of operation of the Tongue River Railroad since this is the year that BNSF job losses will likely occur. In the initial year of operation it is estimated that the Tongue River Railroad will employ 80 full-time employees. TRRC estimates a breakout by job category as shown in Table 4-8. Table 4-8 assumes operation over the Western Alignment. The number of new jobs would be the same for the Original Preferred Alignment but would be higher for the Four Mile Creek Alternative because the longer distances traveled, and the adverse grade conditions require more crew.

Table 4-8. Number of Permanent New Jobs Created in Initial Year of Operations of the Tongue River Railroad Over the Western Alignment Assuming TRRC Operates its Own Trains

Position	Number of Employees	Position	Number of Employees
Train Crew Members	38.4	Administrative	
General Manager	1	Administrative Assistant	2
Supervising Trainmasters	2	Clerical and Office Staff	6
Equipment Maintenance		Maintenance of Way (Miles City)	
		Track Supervisor	1
Foreman and Assistant	2	Foreman	2
Diesel Mechanics	2	Crew	4
Electricians	2	Maintenance (Ashland)	
Welder	1	Section Foreman	1
Mechanic Helper	2	Section Gang	5
Carmen/Inspectors	5.5	Track Inspectors	2
Signal/Communication Technician	1		
Total	80		

Source: (Leilich, 1998)

A current estimate of BNSF crew member job losses in the initial year of Tongue River Railroad operations (using the same analytical method as the 1992 DEIS) is shown in Table 4-9.

Table 4-9 shows that the total estimated loss of BNSF crew member jobs in the first year of TRRC operations over the Tongue River Railroad would be 87. This occurs because the savings in time and distance afforded by the Tongue River Railroad over the existing BNSF routing results in the need for fewer crew members. If BNSF were to operate its own locomotives and crews over the Tongue River Railroad, the BNSF job losses likely would be much less. Regardless, the operation of the Tongue River Railroad provides many new job

Table 4-9. Estimation of BNSF Crew Member Job Losses in Initial Year of Operations Over the Tongue River Railroad

Assignment	Crew Size	Total Crew Members		Trains/ Day	Required Crew Days		Days/ Week	Crew Days/ Week		Days Worked	Total Jobs Affected
Gillette Area Coal Movements											
Sheridan to Forsyth	2										
Return Forsyth to Sheridan	2										
½ Helper Day	1	5	x	1.04	5.2	x	7	36.4	÷	4	9
Decker Area Coal Movements											
Sheridan to Forsyth	2										
Return Forsyth to Sheridan	2										
Mine Turn	2										
Helper	2	8	x	4.23	33.8	x	7	236.8	÷	4	59
Glendive Based Crews											
Glendive to Forsyth*	1										
Forsyth to Glendive*	1	2	x	5.3	10.6	x	7	74.2	÷	4	19
Total											87

*Only one-half of trip would be eliminated.

opportunities (shown in Table 4-8) to offset many of the projected BNSF crew losses (shown in Table 4-9). The net difference is as follows:

BNSF crew member job losses	87
New TRRC jobs created	80
Net railroad jobs lost to region	7

The estimate is for the Western Alignment and the Original Preferred Alignment. The Four Mile Creek Alternative would require about eleven additional crew members. This estimate of net job losses tends to overstate long term job losses for the following reasons: (1) it does not take into account that train crew jobs will increase as TRRC begins to move tonnage from new mines in the Ashland area that are unlikely to be opened in the absence of the Tongue River Railroad, and (2) it does not take into account the fact that significant new job opportunities will become available at those new surface mines in the Ashland area.

Direct Wages

At an estimated average annual salary per BNSF crew member of $86,000 per year (including benefits) and TRRC total wages (including benefits) of $3.2 million, the loss of seven jobs to the region would amount to a loss of $4.3 million per year in direct wages for operation over the Western Alignment or the Original Preferred Alignment in the initial year of operation. As noted above, the regional wage creation and economic stimulation as a result of the Ashland area mine development likely would more than offset the losses in wages and associated economic activity from the loss of the BNSF crew jobs.

Population Changes

An estimate of the change in population resulting from the initial year of operations over the Tongue River Railroad via the Western Alignment is presented in Table 4-10.

The same change in area population would occur as a result of the Original Preferred Alignment. The estimate of a loss of about 31 persons to the regional population is less than two tenths of one percent of the existing population in the region. Moreover, it would be more than offset by the job creation from the development of Ashland area coal mines.

Table 4-10. Estimate of Population Change Resulting from Initial Year of Operations Over the Tongue River Railroad Company

Net Direct Employment Changes	Net Indirect Employment	Total Employment Changes	Total Population Changes
-7	-3.5	-10.5	-31.5

Notes:
Assumes 0.5 new indirect jobs for each one direct job (ICC, 1992)
Assumes 1.5 new persons leaving the community for each job loss.
Assumes three persons per household.

Regional Fiscal Impacts from Taxes

The Montana Taxpayers Association (MTA, 1998) performed an analysis of tax benefits to local communities from the construction of the Tongue River Railroad. The analysis assumed a total construction cost of $295 million for the entire TRRC rail line from Miles City to the Decker area (excluding the spur trackage of 7.3 miles) via the Western Alignment. Table 4-11 provides a summary of benefits to the State. This does not include corporate license taxes nor does it include secondary effects attributable to new employment such as residential property taxes or motor fuel taxes paid by employees. Tables 4-12 through 4-14 summarize property tax impacts to county governments and school districts in Rosebud, Custer, and Big Horn Counties, respectively.

The increased taxable revenues to local governments and school districts could have major positive socio-economic benefits. The most dramatic is on the Birney Elementary School District which would see its taxable base increase by 1614 percent. The 13-fold increase ($5.9 million per year) would yield more than $400,000 in revenues compared to less than $30,000 currently. These funds could be used to significantly increase educational opportunities. Alternatively, the increased tax base could be used to reduce property taxes and increase spending on education.

Table 4-11. Fiscal Revenues to the State from Property Taxes on the Tongue River Railroad Company

Tax	Annual Collection
University Levy	$119,000
School Equalization	$1,900,000

Assumptions:
1. Tax classification of 6.76 percent yields taxable value of $19.9 million from taxes on the Tongue River Railroad Company.

Table 4-12. Fiscal Revenues to Rosebud County from Property Taxes on the Tongue River Railroad Company

Entity	Increase in Taxable Value	Percent Increase over Current Value
County	$10.9 million	6.2
Ashland Elementary School District	$ 6.43 million	480.5
Birney Elementary School District	$ 5.91 million	1607.7
Rosebud Elementary District	$ 174 thousand	8.0
Lame Deer High School District	$12.35 million	703.3

Source: MTA, 1998.

Table 4-13. Fiscal Revenues to Custer County from Property Taxes on the Tongue River Railroad Company

Entity	Increase in Taxable Value	Percent Increase over Current Value
County	$7.79 million	47.0
Miles City Elementary School District	$3.13 million	32.1
Kircher Elementary School District	$2.61 million	117.0
Foster Creek School District	$2.08 million	481.1
Custer County High School District	$7.79 million	47.0
Miles City Community College District	$7.79 million	47.0

Source: MTA, 1998.

Table 4-14. Fiscal Revenues to Big Horn County from Property Taxes on the Tongue River Railroad Company

Entity	Increase in Taxable Value	Percent Increase over Current Value
County	$1.18 million	4.3
Hardin Elementary School District	0	0
Decker Elementary School District	$1.18 million	13.2
Hardin High School District	$1.18 million	5.1

Source: MTA, 1998.

In summary, because the operation of the Tongue River Railroad will result in relatively few newcomers, and therefore few new students, the net effect of these increases in tax revenues will be to provide significant resources to better educate future students from existing families, to reduce property taxes to all taxpayers, or a combination of both.

4.2.4 Environmental Justice

Executive Order 12898, which was signed by President Clinton in February 1994, requires, among other things, that NEPA documents analyze environmental effects on racial minorities and low income residents near the Proposed Action. The objective is to avoid imposing "disproportionately high and adverse" human health and environmental impacts on minorities and the poor. The executive order responded to a general perception that unwanted land uses are more likely to be sited in poor and minority communities.

The Department of Transportation issued an "Order to Address Environmental Justice in Minority Populations and Low-Income Populations" on April 15, 1997 (62 Federal Register 18377-18381). Further, in its September 30, 1997 "Interim Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses" (EPA, 1997), minority populations are defined as areas where racial minorities exceed 50 percent or where the minority population percentage of the affected area "is meaningfully greater than the minority population percentage in the general population..." Low income populations can be defined using a variety of criteria including Census Bureau poverty rates.

Based on these definitions, the Proposed Action and its alternatives do not appear to impose disproportionately high and adverse impacts on racial minorities and the poor. As shown in Section 2.7, the 1990 Census identified 662 persons in the two census divisions comprising the immediate project area for the Proposed Action and its alternatives. Some 92.9 percent of these persons were racially "white" compared to the almost identical statewide average of 92.8 percent. The minority population (mainly American Indian) in the two districts is well below 10 percent of the total population and is no higher than the state as a whole. The median incomes for the two divisions were higher than the state as a whole, but the percentage of those living in poverty is slightly higher in the two divisions than in the state as a whole. The Ashland Division had 27.5 percent of its population living at or below the poverty line; the Tongue River Division had 19.5 percent; while the state of Montana had 16.1 percent overall.

As noted earlier in this chapter, the economic benefits of the Tongue River Railroad construction and operation are more likely to benefit the unemployed and the under employed through the creation of new direct and indirect jobs—particularly during construction. As demand for labor increases, low-wage earners should be able to bargain for higher paying jobs. To the extent that there are disproportionate impacts by economic category, the Tongue River Railroad is likely to disproportionately benefit the poor in the immediate vicinity of the project.

In summary, none of the three alternative routes appear to pose environmental justice issues because none of the routes affect an area where the poor and racial minorities live in greater numbers than their representation throughout the region and the state.

4.3 Transportation

The construction of the proposed Tongue River Railroad Western Alignment would increase the number of vehicles using local roads in the project area. This would create short-term impacts during the construction season. Long-term impacts would occur as a result of grade-level crossings that would create delays during train crossings. This section also addresses road crossing construction as it relates to sight distance visibility for motorists approaching intersections.

Big Horn County Road No. 380 begins at S314 just west of the central portion of the Tongue River Reservoir. As shown in Figure 4-1, it becomes Rosebud County Road 528 at the Rosebud County line and continues down river until it joins S566 at Four Mile Creek. The roadway is surfaced with a thin layer of gravel and is maintained by each county within its jurisdiction. The roadway includes four horizontal curves with a design speed of less than 20 mph, seven horizontal curves with a design speed of less than 30 mph, and five horizontal curves with a design speed of less than 40 mph. There is one section of road near the Tongue River Dam and three additional shorter sections totaling 0.2 mile where vertical grades are about 10 percent and approximately 0.1 mile where grades are 13 percent. All other grades on the roadway are less than eight percent. Sight distance is less than desirable in some areas.

Several secondary highways exist in the project area. These roads are eligible for state and federal funding for construction and are maintained by the counties. They are functionally classified as rural collector roads. Secondary highways in the project area are shown on Figure 4-1 and include:

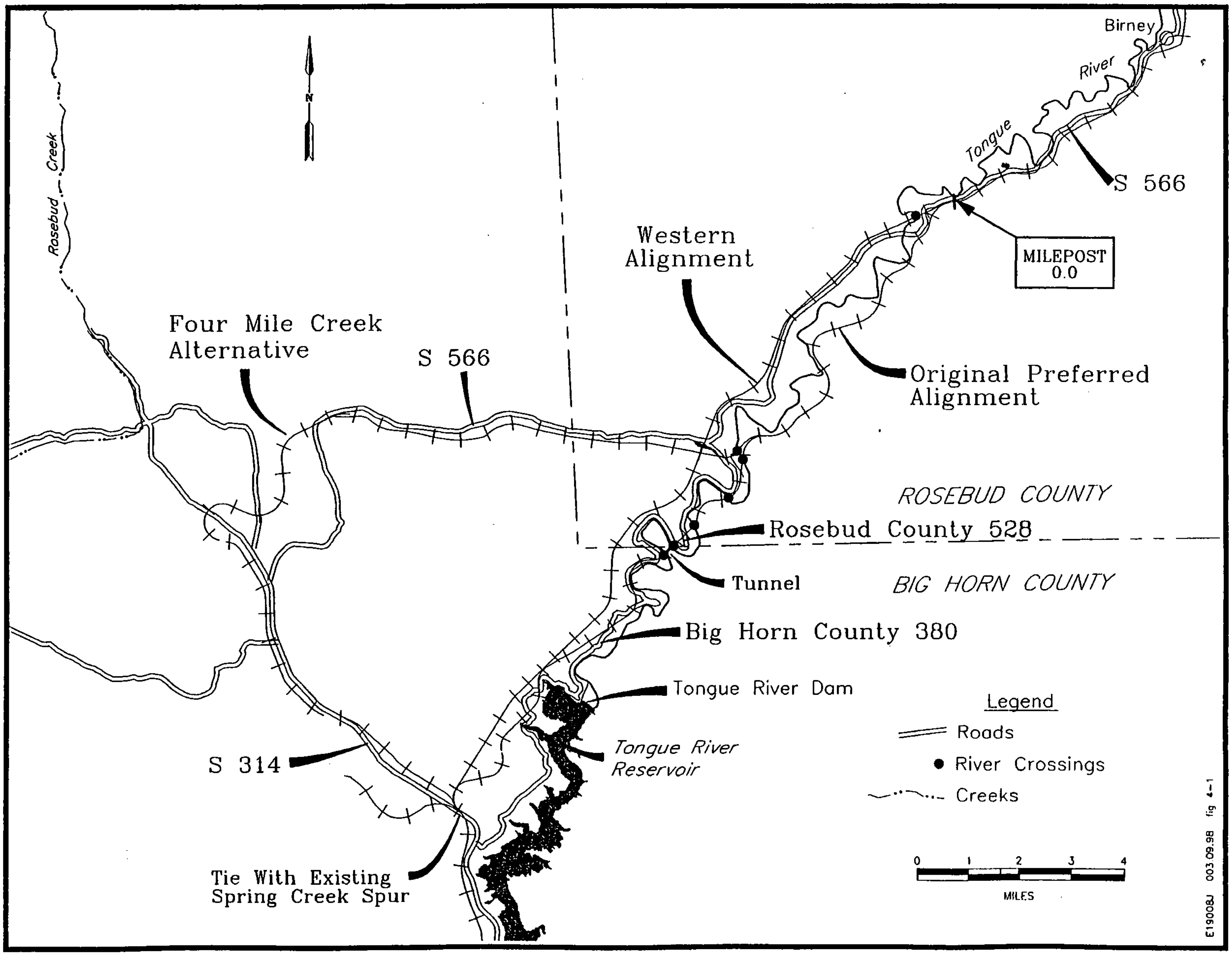


Figure 4-1. Locations of Roads for the TRRC Project

- Secondary Highway 314 (S314), from the north terminus of S338 at the Montana/Wyoming border to U.S. Highway 212 near Busby. This section of roadway is approximately 44 miles long and is two-lane with an asphalt paved surface ranging from 28 to 31 feet wide.

- Secondary Highway 566 (S566), from S314 northwest of the Tongue River Reservoir to Birney. This section of roadway is approximately 52 miles long and is two-lane with a gravel surface ranging from 24 to 28 feet wide.

4.3.1 Construction

During the construction period, roads within the immediate vicinity of construction areas would experience a short-term increase in the amount of traffic—i.e., S566, S314, and Big Horn County Road 380/Rosebud County Road 528. The potential disruption of local traffic would be reduced by TRRC plans to: (1) construct temporary service roads within the rail line ROW to transport workers and materials; (2) use work trains on constructed rail segments to carry ballast and track materials as rail is laid; (3) provide lodging and food services for workers thus avoiding commutes; and (4) disperse construction activities and the work force along the ROW. TRRC plans to use existing roads in the area and to negotiate access to construction sites over private roads, therefore construction of new access roads outside of the ROW would be minimized.

Drivers would be temporarily delayed during construction of the 12 private road crossings and the four public road crossings on the proposed Western Alignment. The private road crossings will be at grade. The public road crossing of S566 at Four Mile Creek is expected to be on a bridge of the type shown in Figure 4-2 while the public road crossing south of Birney will be at grade. The public road crossings of S314, by the two connecting legs of the Tongue River Railroad at the Spring Creek Spur, will be at grade. The TRRC will keep one lane open during construction of private and public road crossings to minimize traffic delays.

The TRRC use of area roads to transport materials could result in increased road maintenance. The required degree of maintenance would depend on the current road conditions and on the increases in traffic. Again, TRRC plans to transport materials and workers within the ROW to the extent possible and thus would mitigate the impact to roadways. Plans to disperse construction activities and the work force along the alignment would limit the concentration of TRRC-related activity within a few, specific road segments.

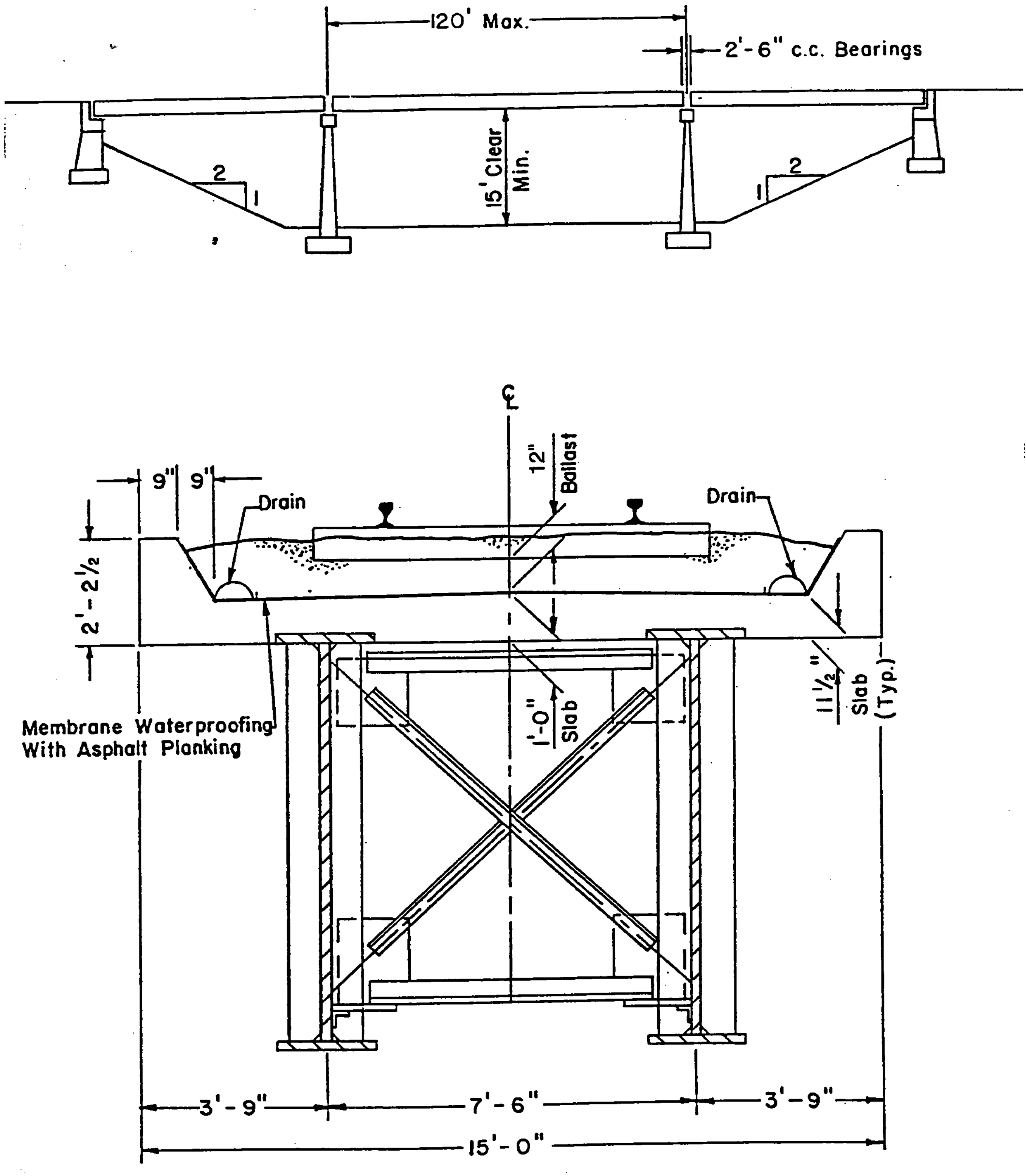


Figure 4-2. Typical Long Span Bridge

The proposed Western Alignment will require crossing S314 at two locations west of the Tongue River Reservoir. At the S314 crossing, the sight distance is excellent in both directions as the Western Alignment will approach the highway over open country at nearly a 90 degree angle. Trains traveling south to the S314 crossing will be very visible. Likewise, trains departing either the Decker or the Spring Creek mines on the Spring Creek Spur to travel north on the Western Alignment will also be very visible since the Spring Creek Spur parallels S314.

The proposed Western Alignment will require the reconstruction of S566 at two locations: one at the point where it is tangent to S566 in Section 14T.7.S, R.4.1.E, Spring Gulch, MT USGS Quad, and the other where the proposed Western Alignment crosses S566 and Rosebud County 528 near the Hosford Ranch (Sec 28T.7.S., R.4.1.E).

The proposed Western Alignment would cross Four Mile Creek and S566, at about the point where Rosebud County 528 joins S566. This would be a grade-separated crossing in which the track would cross the Four Mile Creek drainage and S566 on a bridge and fill. The existing junction of Rosebud 528 and S566, which has a "Y" configuration, will be rebuilt to the east of the S566 and Western Alignment for a nearly 90 degree grade-separated crossing.

There is a point north of the Four Mile Creek crossing in Section 14, T.7.S where the track fill would impact the S566 roadbed. S566 will require reconstruction at this point, the extent of which will be known when final engineering plans are available.

Just north of the point at which S566 crosses the Tongue River near the McKinney Ranch, the Western Alignment will cross S566 at an acute angle near the crest of a hill. Vehicles traveling north from the S566 bridge ascend a hill which limits the sight distance approaching the crossing. It may be necessary to install active warning signals, recontour S566, or both. This will be evaluated after the final engineering plans are available to a Montana Department of Transportation (MDT) diagnostic review team. Vehicles traveling south from Birney will have excellent sight distance at this crossing since the track parallels S566 for at least a mile before the crossing.

Since S314 and S566 are part of the Secondary Highway system, the TRRC is required to obtain MDT approval for any reconstruction. Upon completion of the final engineering, the TRRC would submit road reconstruction plans for review by officials not only of the MDT but also of Rosebud County, the county in which the reconstruction areas are located. The State, after considering local comments, would make the final recommendations regarding plan modifications. Reconstruction costs would be the responsibility of the TRRC.

Both the Four Mile Creek Alternative and the Original Preferred Alignment would require more road crossings than would the Western Alignment. The Four Mile Creek Alternative would require four crossings of S566, two crossings of S314, and 18 private crossings. The Original Preferred Alignment would have required 15 private grade crossings and involve county road reconstruction at two different points to allow for five public crossings.

4.3.2 Operation and Maintenance

The operation of a railroad on the TRRC Western Alignment, the Four Mile Creek Alternative, or Original Preferred Alignment would result in few transportation impacts. The primary impact would be the delays experienced by vehicles at the unseparated rail/highway ("at-grade") crossings along the three proposed routes. An estimate of the delays is set forth below.

There are four public rail/roadway crossings associated with the proposed Western Alignment. S566 would be crossed one time at grade and one time on a bridge while S314 would be crossed two times at grade at the junction point with the rail spur serving Spring Creek Mine.

Six rail/roadway crossings are unique to the Four Mile Creek Alternative and involve S566 and S314. Five public rail/roadway crossings associated with the Original Preferred Alignment involve Rosebud 528, Bighorn 380, and S314.

All public at-grade crossings are to be constructed with standard 40-foot wide, concrete approach. If required by adjacent landowners, the crossings would be equipped with cattle guards. The TRRC would be responsible for the long-term maintenance of the grade crossings.

The method used to calculate vehicular delay at rail/highway crossings employed for the proposed Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment is explained below.[21] The calculation requires a determination of the number of

---

[21]The methodology required the calculation of the following equation:
Expected Delays = (P) Probability of Delay X ADHT whereby, (P) Probability of Delay is the expected blocked-crossing time per day, in minutes, divided by the number of minutes in a day. The expected blocked-crossing time per (continued...)

vehicles delayed, the percentage of trips delayed and the average duration of each delayed vehicle. The percentage of trips delayed is determined by dividing the estimated number of vehicles delayed by the average daily highway traffic (ADHT) for each crossing. The method is based upon current ADHT figures obtained from the MDT.[22]

Projections for the daily crossing delays range from two vehicle trips per day for S566 crossings and 25 vehicle trips for S314 crossings on all three alignments. This represents less than two percent of the vehicle trips on S566 and about 4.5 percent of vehicle trips on the relevant segment of S314. The average delay per vehicle would be about 1.5 minutes on S566 and about 4 minutes on S314.

Estimates of delays should be considered in the context of the rural setting of the Proposed Western Alignment, the Four Mile Creek Alternative, and Original Preferred Alignment. Optimal design speeds, excluding adverse grades, would be 45 to 55 mph, blocking crossings for about one minute (Western and Original Preferred Alignments). However, along the Four Mile Creek Alternative route where adverse grades exist, trains would be traveling 10 mph and could block crossings up to seven minutes. Nearly all of the vehicles disrupted by train operations would be operated by rural residents traveling to and from outside communities and mine workers traveling to and from their job sites. Although no emergency services currently are available in the project area, it is apparent that any emergency vehicle traveling along S566 or S314 in the vicinity of the railway crossings could be stopped by a TRRC train. Regarding medical emergencies, the percentage of cases in which a delay would be critical for the patient is very small (ICC, 1992).

Mitigative Measures: Estimate of Crossing Improvements

The impact assessment of vehicular delays at the unseparated rail/highway crossings requires additional analysis to determine mitigative measures. A MDT priority index is used to

---

[21](...continued)
day is a function of the length, speed, and the number of expected daily trains at each crossing, determined by the following equation: (ADTT) (L + 3000')/S whereby ADTT = Average Daily Train Traffic; L = Train length; S = Train Speed, in feet per minute; 3000' = typical distance between a crossing and that crossing's signal activation circuits. The information assumed in this equation was derived from the operating plan developed for the TRRC (CSI, 1990). 6,532 foot-long trains were assumed as well as 50 mph speeds. Given the proposed coal haulage along any of the three routes, the Average Daily Train Traffic was assumed at six roundtrips or 12 trains daily in 2005.

[22]The estimate of the average duration per delay equals one-half of the expected blocked-crossing time per train. Expected blocked-crossing time is based on the previously discussed methodology given for Probability of Delay.

rate each public at-grade railroad crossing to determine the sequence in which public at-grade crossings will be considered for active control devices. According to Montana Code Annotated, 18.6:301-315, Railroad Administrative Rules, each public at-grade crossing will be placed on a priority index after review by an MDT diagnostic review team. According to John Lewis of MDT, the diagnostic review would occur after final engineering drawings are available for the crossing locations (Lewis, 1998).

The Manual on Uniform Traffic Control Devices standard for crossbucks requires two reflectorized crossbucks at each crossing. This would be the minimum installed protection for public crossings.

Traffic Projections

Projections were based on current traffic volumes adjusted throughout the analysis period to reflect natural population change in affected communities and the population increases from coal mine development. Table 4-15 presents the findings of this methodology, as well as traffic projections assuming only natural population changes.

4.4 Safety

The principal safety concerns for the operation of any alignment on the Tongue River Railroad are the potential for accidents between trains and vehicles at grade crossings and the potential for inadvertent train operation including either loss of control or train derailments.

The design criteria for the Tongue River Railroad are intended to facilitate the operation of unit coal trains of 115 to 125 cars with design speeds between 45 and 55 miles per hour. The design includes the following:

- Maximum horizontal curvature of three degrees;
- Minimum tangent distance between horizontal curves of 200 feet;
- Maximum grade against empties of one percent compensated for curvature;
- Maximum grade against loads of 0.50 percent; and
- Maximum vertical curvature of 0.05 feet per 100 feet in sags and 0.10 foot per 100 feet at summits.

Table 4-15. Average Daily Highway Totals

	Mean ADHT	Baseline/Baseline + Impact ADHT		
		2000	2005	2010
S566				
Birney South (Junction w/S314)				
Baseline	78	68	66	67
Baseline + Impact		90	89	101
Tongue River Road to Junction w/S314				
Baseline	78	68	66	67
Baseline + Impact		90	89	101
S314				
S566 Junction w/S314, to Decker				
Baseline	472	491	502	513
Baseline + Impact		529	545	564
Decker to Sheridan				
Baseline	756	786	803	820
Baseline + Impact		848	874	904
Northern Cheyenne Roads[1]				
Birney Village to Ashland				
Baseline	200	253	275	297
Baseline + Impact		342	369	430
Birney Village to Lame Deer				
Baseline	215	291	324	352
Baseline + Impact		312	345	381

Source: (ICC, 1992)
[1] The calculated increases in traffic for the two Northern Cheyenne roads do not include estimates of mine trips.

Both the proposed Western Alignment and the Original Preferred Alignment meet the design criteria; therefore, a "lost control" operation would not be expected for these two routes.

From Milepost 28.03 at the Spring Creek Spur connection to Milepost 26.33 the Four Mile Creek Alternative has adverse grades (against loads) in excess of 1.53 percent. Specifically, loaded coal trains will have to climb 648 feet in elevation with varying adverse grades from 0.594 percent to 1.533 percent over a distance of 13.07 miles. After this alignment reaches the top of the Four Mile Creek drainage it then descends 828 feet along Four Mile Creek until it reaches the Original Preferred Alignment at Milepost 7.7. In this descent between Milepost 11.21 and Milepost 14.39, there are 3.18 miles of a descending 2.31 percent grade. This steep grade with loaded coal trains represents a less than optimal operational situation with an enhanced probability of losing control of the train.

In one simulation performed by CSI in 1990, it took seven locomotive units, with full dynamic braking on all units, and a very heavy brake application to hold train speed to no more than 10 mph in descending the grade. Had speed increased by as little as five mph, or had dynamic braking been lost on two to three locomotives, the engineer could have lost control of this train (CSI, 1990).

Although transport of hazardous materials is not anticipated because only unit trains that carry coal are expected, the Tongue River Railroad will be a common carrier and therefore could carry hazardous materials. The impacts of loss of control and derailments would become more significant if mixed freight trains were to use the Tongue River Railroad, particularly via the Four Mile Creek Alternative. The situation is exacerbated by the relative lack of emergency services in the area. These topics are discussed later in this section.

4.4.1 Construction

Residents of the project area would experience only minimal safety impacts during the construction of the proposed rail line. Most safety concerns would involve the construction workers undertaking dangerous jobs, such as heavy equipment operation.

Materials which would be used or transported during the construction period would be limited to petroleum products such as gas, diesel fuel, lubricating oil, and solvent. These materials and petrochemicals represent the kinds of products usually associated with construction projects.

Precautions would be taken to store all construction materials on land to prevent their entry into any waterway. Equipment operators would transport and handle fuels in such a manner to prevent dumping or spilling. Petroleum products in particular would be marked for careful handling to prevent their entry into a waterway. The TRRC would undertake the transportation of any hazardous material in full compliance with the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and governing regulations. Hazardous material spills during the construction phase would be mitigated by the TRRC or its contractors according to applicable standards and regulations. Any such spills will be reported to Montana or federal agencies as required.

4.4.2 Operation and Maintenance

The safety impacts associated with rail line operation of the proposed Western Alignment include the possible occurrence of train/vehicle collisions at the 12 private road crossings and four public road crossings. For the Four Mile Creek Alternative, there are 18 private road crossings and six public road crossings. For the Original Preferred Alignment, there are 15 private road crossings and five public road crossings. Emergency service impacts might also occur because of the railroad's crossing of public roads.

Safety concerns also require the identification of hazardous chemicals and materials which would be used or transported by the TRRC. Mitigation of the safety hazards necessitates plans for their handling and storage and plans for their clean-up in the event of spillage.

Grade-Crossing Accidents

The calculation of railroad and vehicle collisions at-grade crossings employed an equation developed as part of the National Cooperative Highway Research Program, based on three factors: (1) daily train traffic figures assumed for the analysis period; (2) daily vehicle traffic projected to occur on affected roadways throughout the analysis period; and (3) the effectiveness of types of crossing-warning devices planned for the various crossings.[23]

---

[23] The methodology is referenced in the Highway Research Board, National Research Council, National Academy of Sciences, *Factors Influencing Safety at Highway/Rail Grade Crossings*, National Cooperative Highway Research Program Report Number 50, Washington, D.C., 1968, pp. 59-62. The equation is: EA = (A) (B) (ADTT), where EA = expected annual accidents at a crossing; A = an empirically derived factor, associating traffic volumes with accident frequency; B = an empirically derived factor, representing the relative effectiveness of various types of crossing-warning devices; ADTT = average daily train traffic.

The variables in the equation are constant for all the rail/roadway crossings on the proposed Western Alignment, Four Mile Creek Alternative, or Original Preferred Alternative.[24] Train speeds are estimated to be between 45 and 55 mph for the Western and Original Preferred Alignments. Train speeds for the Four Mile Creek Alternative will vary from 10 mph to 55 mph.

The findings of the equation, assuming two different types of crossing-warning devices, are reported in Table 4-16. Accidents would occur at a rate of not more than one every 50 years at the crossings equipped with either crossbucks or stop signs. Accidents over the entire analysis period would not even total one accident—regardless of the use of crossbucks or stop signs.

Table 4-16. Projected Accident Rates for the Year 2005

I. Stop Sign Crossing (A = .000347 B = 4.51)	
ADTT (six roundtrips)	12
Finding: EA	0.018
II. Crossbucks Crossing (A = .000347 B = 3.89)	
ADTT (six roundtrips)	12
Finding: EA	0.016

Emergency Services

A major safety concern with public road crossings by railroads is restricted access for emergency vehicles. Ambulances traveling from Sheridan, Wyoming, in response to medical emergences could experience the same delays as any vehicle at crossings of the rail line and S566 or S314. Fire response calls from either Ashland or Decker also could be delayed, if a passing

[24] The only factor that potentially could differ from crossing to crossing is ADHT, which, in the case of the 15 public crossings considered for the proposed Western Alignment, the Four Mile Creek Alternative and the Original Preferred Alternative, is translated to only one value under the list of "A" factors. (See "a" below.) The values of the remaining two factors in the equation are discussed under "b" and "c" below.

a. The "A" Factor:

All the ADHT figures are below 250 and, according to Report Number 50, would translate to an A Factor of .000347.

b. The "B" Factor:

Given the two possibilities of crossing-warning devices at the TRRC crossings, the equation was worked using two values, as presented in Report Number 50; 1) the maximum value of 4.51 for "Stop signs, highway volume less than 500 per day" (with no adjustment); and 2) the value of 3.89 for "Crossbucks, highway volume less than 500 per day."

c. in the year 2005, ADTT is equal to six roundtrips or 12 trains daily.

train temporarily blocks a crossing. The percentage of medical emergencies in which a delay would be critical should be small. A delayed response to fire emergencies, on the other hand, could mean an increase in property losses. Train delays for the Four Mile Creek Alternative could be seven times longer on S314 and S566 due to its slower operating speeds.

Derailments

An estimate of derailments that might occur on the proposed Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment in the year 2005 is based on a derailment rate of 3.64 per million train-miles and on the number of train-miles estimated for any route.[25] The estimate of train-miles is derived by multiplying daily trains by train miles and by the number of operating days in a year as shown in Table 4-17. The number of derailments projected to occur along any of these routes is presented in Table 4-18.

Table 4-17. Train-Miles for Each Alignment in the Year 2005

Alignment	Train Numbers (one-way trips)	Miles	Operating Days	Estimated Train Miles (10^6)
Western	12	17.3	365	0.076
Four Mile Creek	12	29.4	365	0.128
Original Preferred	12	18.7	365	0.082

Table 4-18. Train Derailments for Each Alignment in the Year 2005

Alignment	Estimated Train Miles (10^6)	Derailment Rate	Derailment Numbers
Western	0.076	3.64	0.27
Four Mile Creek	0.128	3.64	0.46
Original Preferred	0.082	3.64	0.29

Based on these projections, the projected frequency of derailments is highest for the Four Mile Creek Alternative and lowest for the Western Alignment.

[25] The derailment rate is the 1996 national rate from the Office of Safety Assurance and Compliance of the Federal Railroad Administration.

Further, the projections tend to overstate the derailment risk. The derailment rate of 3.64 incidents per one million route miles represents all reportable events for on-track equipment where damages to equipment and track exceeds $6,500.00 (Ellis, 1998). While this reportable accident number would include major derailments, there is no number per se, for derailments alone. About 70 percent of all reportable accidents are derailments. If this factor is applied to the derailment rate then the derailment projections for each route would be even lower. This revised factor would project that one derailment would occur in about five years for the Western Alignment and about three years for the Four Mile Creek Alternative. Over a 35-year period there would be seven derailments on the Western Alignment and 12 derailments on the Four Mile Creek Alternative.

The potential for injuries and fatalities associated with train derailments was estimated according to the same procedure used in the TRRC EIS (1985). The assumptions, 0.060 injuries and 0.003 fatalities per derailment, suggest that less than one injury or fatality would occur in a 35-year period of operations along the Western Alignment, the Original Preferred Alignment, or the Four Mile Creek Alternative. Any injuries or fatalities that might occur during a derailment would most likely involve TRRC employees.

In 1988 dollars, a property damage estimate would be $250,000 per derailment, which would reflect the equipment and track damage in an accident involving 10 to 20 train cars (CSI, 1990). The TRRC would be the predominant party to experience the losses.

The occurrence of derailments on these routes would be mitigated by the following circumstances:

1) new track, new material, new alignment and new grade;
2) good equipment maintained to high standards;
3) a high level of employee training and safety awareness;
4) frequent track inspections;
5) a single type of train operations (i.e., empty unit trains operating in one direction and loaded unit trains operating in the other direction); and
6) the installation of guard rails (i.e., additional rails in the center of the track to keep derailed wheels in line) on railroad bridges (CSI, 1990).

Railroad Grade Concerns

Neither the proposed Western Alignment nor the Original Preferred Alignment pose any difficulty with regard to the operation of trains on the grades currently engineered. The Four Mile Creek Alternative, however, includes a 2.3 percent descending grade for loaded trains extending a distance of 3.18 miles. The safe descent of loaded trains on this grade would require rigid operating rules for the control of train speeds. Seven locomotives, operating with full dynamic braking under very heavy brake application, would be needed to hold train speeds to no more than 10 miles per hour. If speeds exceeded 15 miles per hour or more, the engineer could lose control of the train (CSI, 1990).

In recognition of the difficulty of stopping a train on a heavy grade once a critical train speed is attained, FRA strongly recommends that railroads take the following safety precautions (FRA, 1997b):

1. On descending grades of two percent or more, a train must be stopped, using an emergency application of the train's air brakes, if the train's speed reaches five miles per hour more than the train's maximum authorized speed.

2. After the train has stopped:
   a. a sufficient number of hand brakes must be applied to secure the train;
   b. once secured, the train must be inspected and no further train movement will be made until authorized by a designated railroad employee.

3. The railroad must conduct an immediate investigation into the cause of the incident and initiate appropriate corrective action.

4. Event recorder data must be routinely inspected to ensure full understanding and compliance with this rule.

While such operational parameters are feasible, it is safer and more efficient to operate on the Western Alternative or the Original Preferred Alignment than it would be to operate over the Four Mile Creek Alternative due to the lower gradients on the former routes.

Hazardous Chemicals and Materials

Because the TRRC plans to principally transport coal, any potentially hazardous chemicals and materials would be those associated with its operation of the railroad as a coal transporter. Petrochemicals, such as diesel fuel and lubricants, would be the primary materials involved in operating such a train.

The TRRC would be a common carrier railroad and thus could transport materials other than coal. However, the TRRC does not intend, nor is it aware of any plans, to haul hazardous materials or chemicals over its line. Given the route of the Tongue River Railroad and the sparse population with no industry, there is little expectation that hazardous materials should be transported on the Tongue River Railroad. In the event that the TRRC should decide to transport these types of materials, it would undertake the plans and procedures required by state and federal laws to insure their safe handling and storage including the training of employees. The TRRC would operate in full compliance with the Hazardous Materials Transportation Act (49 U.S.C. 1080 et seq.), governing regulations and rail industry guidelines for the transportation of hazardous materials.

4.5 Energy

The construction of the Tongue River Railroad, including the operation of trains on the proposed Western Alignment, would affect the use of energy in the project area. This section examines the comparative energy use in the construction and operation over each route.

4.5.1 Construction

The estimate of energy consumed in the construction of the three alternate routes focuses on the fuel consumed by earthwork activity. Fuel consumption by heavy equipment is estimated at 0.15 gallons of diesel fuel per cubic yard of material moved (ICC, 1992). Converted to BTUs, one gallon of diesel fuel equals 138,700 BTUs.

The estimated amount of earthwork for the Proposed Western Alternative is 17,309,000 cubic yards of material. Using the heavy equipment fuel consumption figure of 0.15 gallons per cubic yard material moved, the fuel consumption associated with the Western Alignment would be calculated at 2,596,350 gallons. Converted to BTUs the figure would be 360,113,740,000 (0.36×10^{12}) BTUs.

The estimated amount of earthwork activity required in the construction of the rail line with the Four Mile Creek Alternative totals 10,360,000 cubic yards of material. Using the heavy equipment fuel consumption figure of 0.15 gallons per cubic yard of material moved, the fuel consumption associated with the Four Mile Creek Alternative would be calculated at 1,860,300 gallons. Converted to BTUs the figure would be estimated at 215,539,800,000 (0.22×10^{12}) BTUs.

The estimated amount of earthwork for the Original Preferred Alignment is 7,768,000 cubic yards of material. Using the heavy equipment fuel consumption figure of 0.15 gallons per cubic yard of material moved, the fuel consumption associated with the Original Preferred Alignment would be calculated at 1,165,200 gallons. Converted to BTUs the figure would be estimated at 161,613,240,000 (0.16×10^{12}) BTUs.

4.5.2 Operation

Estimates of diesel fuel use for locomotives operating over the entire Tongue River Railroad by route have been developed by Robert Leilich (Leilich, 1998). These are summarized below.

Each loaded coal train traveling across the Tongue River Railroad via the Western Alignment (south to north) would consume 930 gallons of diesel while each unloaded train returning would require 896 gallons. These trains would be powered by two 4000 horsepower (HP) locomotives and two 3000 HP helper locomotives. The total fuel consumption by train is 1826 gallons over the Western Alignment.

Each loaded coal train traveling across the Tongue River Railroad via the Four Mile Creek Alternative would consume 1759 gallons of diesel while each unloaded train returning would use 1039 gallons of diesel. To climb the long steep grades, each coal train would require two 4000 HP locomotives and three 4000 HP helpers. The total fuel consumed by each train over the Four Mile Creek Alternative is 2798 gallons. As shown earlier, total fuel consumed by a roundtrip train operating over the Western Alignment is 1826 gallons. Thus, using the Western Alignment rather than the Four Mile Creek Alternative saves 972 gallons per trip.

Although Mr. Leilich did not calculate fuel consumption over the Original Preferred Alignment, it would have the same locomotive requirements and approximately the same fuel use rate as trains travelling across the Western Alignment. Because its overall length is about one percent more than the Western Alignment, its per train fuel use is calculated to be one percent more or 1844 gallons.

Table 4-19 provides an annual estimate of the year 2005 diesel fuel use over the entire Tongue River Railroad by route alternative assuming that there will be seven roundtrip trains per day over the entire line.

4.5.3 Burlington Northern Sante Fe

The Burlington Northern Santa Fe (BNSF) presently operates approximately 25 coal haul roundtrips per week on its Decker/Spring Creek to Sheridan segment and approximately eight coal haul roundtrips per week on its Gillette-Sheridan segment. The Decker/Spring Creek trains travel about 31 miles to Sheridan; the Gillette trains travel about 98.6 miles to Sheridan. All of

Table 4-19. Estimate of Annual Fuel Consumption Over the Entire Tongue River Railroad by Route for the Year 2005

Route	Diesel Use
Western Alignment	4.67 million gallons
Four Mile Creek Alternative	7.15 million gallons
Original Preferred Alignment	4.71 million gallons

Source: Adapted from Leilich, 1998.

the trains, including those originating at Decker/Spring Creek and those originating at Gillette, travel from Sheridan north to Forsyth and then to Miles City, a distance of nearly 300 miles.

TRRC anticipates use of its line for all coal trains currently operating on the Decker/Spring Creek-Sheridan segment and the coal trains currently operating on the Gillette-Sheridan segment. The Decker/Spring Creek trains would be diverted north along the TRR to Miles City. The upper Midwest-bound trains presently operating between Gillette and Sheridan would be diverted at Dutch, the connection just east of Sheridan, and then would run on BNSF's line to Miles City.

The amount of fuel currently consumed by BNSF trains to transport to Miles City the coal originating from the Decker and Spring Creek mines and from Gillette would be reduced if the TRRC transported the same coal to Miles City. A round-trip train would consume 8,000 gallons on the BNSF segment from Decker/Spring Creek to Sheridan to Forsyth to Miles City (CSI, 1990). As shown earlier, the fuel use for a roundtrip train operating over the Western Alignment is 1,826 gallons. The savings is 6,174 gallons per trip.

The large difference in fuel use is explained when the distances of the BNSF line and the TRRC line are compared: the trains operating on the BNSF line travel more than 300 miles to arrive at Miles City, while the trains operating on the TRRC line via the Western Alignment travel about 120 miles.

4.6 Tongue River Dam

4.6.1 Construction Impacts

Construction of the Original Preferred Alignment and the Western Alignment would occur about one mile from the existing Tongue River Dam. The Four Mile Creek Alternative would likely have no direct impact to the Tongue River Dam because of the distance between the proposed route and the dam.

Blasting may occur when constructing the Western Alignment or Preferred Original Alignment to produce a 100-foot deep cut located one mile west of the left dam abutment. Again, the Four Mile Creek Alternative would avoid this area entirely. A seismic analysis based on local geology and specific blasting plans may be necessary to quantify the risk to the dam and spillway. TRRC has committed to working closely with MDNRC during the development of the geotechnical drilling program along this section. The charges will be designed to ensure that there will be no adverse affect to the integrity of the Tongue River Dam (Hadley, 1993). TRCC will notify MDNRC if blasting is required within two miles of the dam and new spillway. TRRC would monitor the new concrete structures at the dam and design the blasts to limit peak particle velocity to two inches per second at the new spillway (Wetzel, 1998).

Repairs to the Tongue River Dam are scheduled to be complete in June 1999 (Sanders, 1998). It is unlikely that the construction of the Western Alignment or the Original Preferred Alignment would occur simultaneously with the Tongue River Dam construction. No cumulative effects from the dam project and construction of the rail alignment should occur. However, the total time of environmental impact may be lengthened from sequential construction schedules, which may slow the recovery of the area from short-term impacts (e.g., sediment loading from construction activity).

4.6.2 Operation and Maintenance

Effect of Trains on Dam Stability

Research of other dams was conducted to determine if a railroad located near the dam led to any impacts on dam stability. The Boysen Dam on the Big Horn River and Glendo Dam on the

North Platte River in Wyoming have railroads that are located much closer than the proposed Western Alignment or Preferred Original Alignment is to the Tongue River Dam. No vibration problems have been reported for the Boysen and Glendo Dams.

The Draft EIS (1992) presented results from the U.S. Bureau of Reclamation study of a desalination plant near Yuma, Arizona. A strong motion earthquake sensing system was installed to determine the structural responses of dams to earthquake motions. In the study, the instrument was placed within 50 ft of a railroad track. After adjusting the instrument (from one percent to three percent of the gravitational acceleration) for nuisance readings from the trains, the instrument was never triggered by any of the numerous trains passing within 50 feet (ICC, 1992).

Therefore it is reasonable to conclude that operation over the Western Alignment or the Original Preferred Alignment, which are located about one mile away from the Tongue River Dam, will not affect the structural stability of the dam.

Effect of Railroad on River Flood Levels

With the increased spillway capacity of the new design for the Tongue River Dam, the MDNRC expressed concern about the effect of the railroad on six inhabited or habitable structures below the dam and whether any of the proposed railroad bridges may be overtopped during high flow events. WWC Engineering, the hydrologic consultant who conducted the original studies for the Draft EIS (ICC, 1992), performed additional modeling using the new Tongue River Dam design dimensions with flow events of 60,000 cfs, 100,000 cfs, and 120,000 cfs. The study results are presented in Appendix D.

Using the Original Preferred Alignment with a total of five bridges as a worst-case scenario, the results indicate that no homesites should be impacted solely as a result of the construction of the proposed railroad bridges nor would the extent of inundation of the homesites be appreciably increased as a result of construction of the railroad bridges. Also, the surface water elevations of the flows analyzed are well below the railroad bridge elevations and no overtopping would occur (Newell, 1993).

The Western Alignment with its one proposed bridge should not adversely impact the homesites during high flow events and no overtopping of the bridge should occur. The same should be true for the Four Mile Creek Alternative.

4.7 Soils and Geology

Soil impacts from construction of the Western Alignment, Four Mile Creek Alternative, and Original Preferred Alignment are typical of any operation where soil is removed or disturbed, stored, and replaced, and may include (1) losses of salvage materials through erosion and handling, (2) decreases in favorable physical properties, (3) reduction of biological activity, (4) disturbance of saline-sodic soils, (5) slumping, and (6) potential loss of prime farmland. The discussions below highlight these impacts with respect to specific conditions along the proposed alignments.

A geologic/geotechnical investigation (ESA Consultants, 1997) performed in the area of the proposed Western Alignment identified geologic materials consisting of predominantly rippable sediments (interbedded siltstone, sandstone, and claystone) and highly fractured clinker materials. These clinker materials are expected to shrink from cut to fill. Based on interviews with local contractors, and ESA's experience at the Tongue River Dam, shrinkage of 10 to 25 percent is likely. Rippable sedimentary rock materials may be expected to swell between 10 to 20 percent from cut to fill.

4.7.1 Construction

Soil Loss

Soil erosion due to wind and water runoff is likely to occur during construction of any of the proposed alignments. Initial erosion rates are expected to be moderate to high due to soil characteristics, slope steepness, and precipitation regime. Areas cleared of topsoil, denuded, or otherwise disturbed are generally more susceptible to erosive forces because subsoils tend to have lower inherent infiltration and percolation rates which increase the potential for runoff. This would be aggravated by compaction from equipment operation.

Construction areas such as temporary construction staging sites and the access corridor would be susceptible to erosion. Topsoil stockpiles also would be susceptible to erosion, depending on side slope steepness. If left exposed and unprotected for more than a couple of months, significant amounts of soil could erode during precipitation runoff events.

The majority of surface soils in the ROW have fine fractions (< 2 mm) with loamy to silty clay loam textures, which have a moderate to low susceptibility to wind and water erosion. However, slope steepness plays an important role in the potential for erosion due to runoff.

Where slopes exceed 15 percent, erosion potential would be high regardless of the fine-fraction texture. Conversely, erosion potential would be reduced where coarse fragment content exceeds 50 percent.

Gross estimates of soil erosion due to rainfall were made for the study areas using the Revised Universal Soil Loss Equation (RUSLE). The original Universal Soil Loss Equation (USLE) was revised in recent years to reflect advances in the estimation of soil loss and to allow a more detailed analysis of site conditions (Renard, Laflen, Foster, and McCool, 1994). The components of both equations are the same; however, improvements were made in the estimation of the individual factors. The USLE/RUSLE is as follows:

$$A = R \times K \times LS \times C \times P$$

where:

A = Estimate of soil loss in tons/acre/year

R = Rainfall-Runoff Erosivity Factor, representing the erosivity of the climate. Isoerodent maps have been generated, from which the R factor for a particular location in the United States may be taken. For the revised equation, the values of this factor for the western states were re-evaluated and corrected based on new considerations of how erosion occurs in this region. An R value for the area of the railway construction (all routes) of 18 was selected using the isoerodent map from the RUSLE and was used in this study.

K =Soil Erodibility Factor, reflecting the exposed soil's inherent susceptibility to erosion under the standard condition of continuous fallow. Values typically range from about 0.10 to 0.45, but may go as high as 0.70, with high coarse sand and high clay having the lower values and high silt and high fine sand having the higher values. The Natural Resources Conservation Service (NRCS) has developed K values for many soils across the United States. Some of these values may be adjusted slightly under the RUSLE, with soils in arid areas tending to have lower K values than similar soils in wetter areas. An average K value of 0.32 was previously determined for the soils in the vicinity of the route (ICC, 1983). However, this is representative of the surficial soils. Most of the exposed soils will be composited from a mixture of deeper soils ripped from the cut areas and deposited in the fill areas. This material is expected to have a significant percentage of rock and clinker mixed in, which will effectively reduce the erodibility. Some of the deeper soil horizons and less erodible surficial soils in the area have K values of approximately 0.10 - 0.20 (NRCS, 1996). Furthermore, an erodible soil with a typical K value of 0.32 would be reduced to approximately 0.24 with the addition of 50 percent rock fragments (Leopold, 1998). Therefore, considering the arid climate, the mixing of deeper soils and geologic strata, and the presence of a significant percentage of rock and clinker fragments, an average value of 0.20 has been assumed for all routes.

LS = Topographic Factor, accounting for the effect of the exposed slope lengths and their degree of slope on the rate of erosion. The average slope length and degree of slope associated with the finished construction was estimated for all three alternatives. The estimated average slope lengths for each alignment and the average slope gradients (50 percent for all alignments) were used to determine the average LS factor (9.73 for the Western Alignment, 6.87 for Four-Mile Creek Alternative, and 7.97 for the Original Preferred Alignment).

C = Cover/Management Factor. This factor represents conditions that can be managed to control erosion, mainly protection provided by ground cover and vegetation. To reflect a worst-case scenario assuming the site is freshly disturbed and no ground cover is available for protection, a C factor of 1.0 for bare soil was chosen for all alternatives.

P = Supporting Practices Factor. This factor accounts for the effect of surface conditions on flow pathways and hydraulics. This factor is mainly used when agricultural practices such as contouring and tilling are going to be implemented. To reflect a worst-case scenario, no such practices were assumed for the construction and a P factor of 1.0 (no contouring/furrowing) was selected for the analysis of all alternatives.

The results of the soil loss estimation are shown in Table 4-20:

Table 4-20. Potential Gross Soil Erosion Estimate for Proposed Action and Alternative Routes

Route	Affected Area (ac) [2]	Average Slope Length (ft)	LS Factor	Gross Erosion Estimate[1] (tons/ac/yr)	(tons/yr)
Western Alignment	364	103	9.73	35.0	12,750
Four Mile Creek Alternative	456	71	6.87	24.7	11,278
Original Preferred Alignment	334	85	7.97	28.7	9,583

[1] Conservative ("worst case") estimates which do not take mitigation into account. TRRC has proposed substantial mitigation measures (see Chapter Six).
[2] Affected area acres are actual disturbed areas which include most but not all of the ROW.

Overall, the gross soil erosion rate from precipitation estimated for the Western Alignment was 35 tons/ac/yr, due to the greater slope lengths required to level the track through the steeper terrain of this route. The estimated soil loss from the Four Mile Creek Alternative route was 24.7 tons/ac/yr. Although the Four Mile Creek Alternative had the shortest average slope length, the affected area was the greatest of all alternatives, resulting in second-highest total soil loss for an average year of approximately 11,300 tons. The Original Preferred Alignment resulted in soil loss estimate of approximately 9,600 tons/yr over the affected area, losing soil at a rate of approximately 28.7 tons/ac/yr. The above numbers are conservative, as vegetation will eventually reestablish on the disturbed areas, which will significantly reduce soil loss. Also, the numbers do not account for the use of erosion prevention/reduction measures implemented during construction, such as the installation of silt fencing, sedimentation basins, etc. These proposed mitigation measures are described in Chapter Six.

Estimates of the expected sedimentation impacts resulting from this soil loss in the Tongue River are presented in Section 4.8, "Hydrology and Water Quality."

TRRC's use of appropriate construction practices offers an approach to the mitigation of construction impacts. These practices include minimizing soil disturbance and displacement and leaving as little soil as possible unprotected at a given time. Standard reclamation techniques—such as mulching, roughening the soil, soil moistening, benching, and vegetative cover also would contribute to reduced amounts of soil loss (up to 50 percent or more) from wind and water erosion.

Prompt implementation of erosion control measures is critical to minimizing erosion potential. Consequently, TRRC recommends using immediate seeding, mulching, or other interim soil stabilization techniques, especially on the rail line ROW and access road cut-and-fills, until interim seeding or final reclamation is implemented. This is particularly important for areas adjacent to the Tongue River or the several perennial tributaries along the route.

Mulching or seeding could be applied to stockpiles that would not be slated for interim seed mixes until they reach design capacity, even if these areas were to be covered by additional salvaged topsoil.

Physical Characteristics

Soil physical properties of reclaimed areas may be different from conditions before disturbance. Handling could result in the loss of the natural soil profile, destruction of pore space continuity and soil structure, and a loss of organic matter due to mixing and dilution. These changes could adversely affect soil-plant relations due to decreased soil water holding capacity and aeration. A moderate amount of coarse fragment present in project area soils could help to offset these impacts.

The annual precipitation in the project area is relatively low. Consequently, soil moisture stress would probably be limiting in most years. This factor could contribute to potential adverse impacts to soil water-plant relations.

The incorporation of organic matter such as peat or aged-manure into respread soils or nutrient deficient subsoil/substratum material before planting and mulching would enhance the chances of vegetation establishment. This would also accelerate the soil rebuilding processes.

Soil Biological Activity

Biological impacts would occur in most salvaged or disturbed soils. Disturbance and storage can decrease important soil microorganisms such as bacteria, fungi, and algae which are essential in soil nutrient cycling (Miller and Cameron 1976). In addition, some favorable components normally found in natural soils are lost through decomposition during storage. These components include seeds of native plants, rhizomes (underground stems), and other plant parts capable of producing new plants. However, reseeding and planting vegetation after construction should, over time, promote the growth of soil microorganisms and vegetation. These impacts, for the most part, are unavoidable but would be short-term and are therefore considered to be of relatively little significance.

Saline and Sodic Soils

Most soils in the project area have low to moderate alkalinity levels and low sodium levels. No saline or sodic soils have been identified for the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment. Although the original 89-mile TRRC alignment passes through some saline, sodic, and saline-sodic soils, these soils do not occur in the upper Tongue River to any large extent. Localized areas may be identified during construction phase staking.

Slumping

Shallow soils over weathered shale bedrock on slopes greater than 25 percent would have a high potential for failure, especially when wet. The exact nature of these materials, and the determination that they would actually slump, can only be ascertained from detailed, on-site geologic and engineering tests. These tests would be conducted during the detailed geotechnical evaluation and final engineering program. Cuts would be engineered to avoid soil slumping and potential slope failure.

Prime Farmlands

Prime farmland, as defined by the U.S. Department of Agriculture, are soils that are best suited to feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. They produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment. In the project area, soils qualifying as prime farmland must have a developed irrigation system and a dependable supply of quality water. As a result, these soils are along the Tongue River. They are used mainly for irrigated alfalfa or corn and are classified as the Yamac Loam and the Havre Loam (NRCS, 1996). Although the exact number of acres of affected prime farmland have not yet been determined, estimates of potential losses are discussed in Section 4.1.

4.7.2 Operation and Maintenance

The impacts to soils from the operation and maintenance of the proposed railroad would be similar to construction impacts but of considerably less extent and significance. Until vegetation became established along the Western Alignment, potential water and wind erosion would have the most potential impact. Impacts may also be associated with toxic substances from fuel spills or vegetation control measures used to prevent noxious weed invasion or to decrease fire potential. These impacts could potentially reduce the vigor of desirable native or reclamation species or adversely affect the chemical/nutrient status of the soil. TRRC has recommended conditions in Chapter Six to mitigate these potential impacts.

Since potential soil loss due to erosion and slumping is the principal impact associated with long-term operation and maintenance of the Tongue River Railroad, establishment of a healthy vegetation cover is important to minimizing long-term adverse impacts.

4.8 Hydrology and Water Quality

4.8.1 Construction

Identification and Treatment of Wetlands

A preliminary wetlands finding was prepared in 1994 for TRRC's Original Preferred Alignment and the Four Mile Creek Alternative (Western Water Consultants, 1994) in conformance with recent guidance from the U.S. Army Corps of Engineers (COE), the U.S. Environmental Protection Agency (EPA), and the U.S. Fish & Wildlife Service (FWS). This survey was based on review of aerial photography, topographic maps, and field delineation. Subsequently, preliminary assessment of potential wetland areas along the Western Alignment has been performed by Radian and Westech based on review of aerial photography, topographic maps, and field reconnaissance. These surveys were conducted to identify possible avoidance areas early in the planning process. TRRC plans to conduct more detailed wetland studies, as necessary, during final engineering. Eight possible wetland locations on TRRC's Original Preferred Alignment, four on the Four Mile Creek Alignment, and two on the Western Alignment were identified. Figure 4-3 shows the location of these sites. The actual amount of disturbed acres at each location is undetermined but would likely be small.

According to the current federal administrative policy of "no net loss" of wetlands, any wetlands that would be drained or filled by railroad construction would require replacement somewhere within the same general vicinity. For highway construction projects, wetlands mitigation typically takes the form of construction or enlargement of reservoirs, creating a water surface area at least equal to that destroyed by the construction project. TRRC would cross numerous small drainages, creating several opportunities for wetlands mitigation, assuming that cooperating landowners can be located in the same hydrologic region. Where the railroad would cross the Tongue River, acquisition of additional ROW within the floodplain could provide the opportunity to design and construct waterfowl habitat features such as perennial pools with islands and irregular, vegetated shorelines as an integral part of the railroad construction. Wetland mitigation would require a Section 404 permit from the COE.

Section 404 Permits

The Western Alignment, Original Preferred Alignment, or Four Mile Creek Alternative would cross a number of perennial and non-perennial streams (Table 4-21). Some of these crossings may require Section 404 Permits from the COE. With the Original Preferred Alignment, Four Mile Creek Alternative, and Western Alignment, crossings over the Tongue River will require fill to the stream's normal high water line. This activity may require permits. These permits would be applied for once the final alignment ROW has been surveyed and staked.

Table 4-21. Stream and River Crossings for the Western Alignment, Original Preferred Alignment, and Four Mile Creek Alternative

Impact Category	Western Alignment	Original Preferred Alignment	Four Mile Creek Alternative
Number of non-perennial stream crossings	42	37	40
Number of perennial stream crossings	0	0	0
Number of river crossings	1	5	1

Source: Based on an examination of USGS Quadsheets of Project Area.

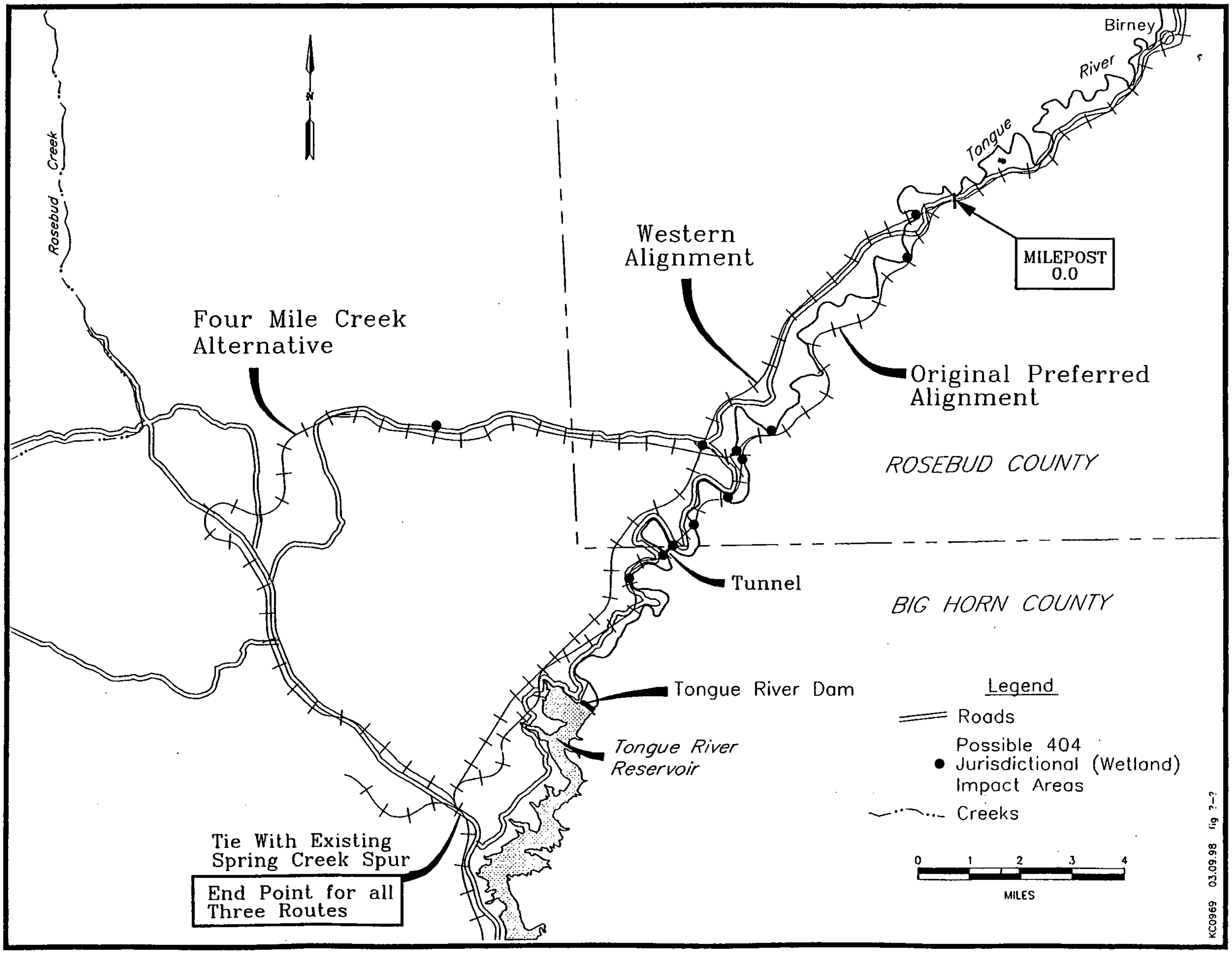


Figure 4-3. Possible 404 Jurisdictional (Wetland) Locations

Increase in Sediment Loads and Suspended Solids

Using the results of the gross soil loss analysis discussed in Section 4.7, the average increase in sediment delivery and total suspended sediment (TSS) concentrations in the Tongue River were estimated for each alignment. As stated previously, the gross soil loss estimates are very conservative and do not reflect erosion control Best Management Practices (BMPs) to be employed during construction. The associated sediment loading estimates are worst-case approximations reflecting short-term conditions that will be reduced as the construction area is stabilized. Furthermore, the estimates assume that the entire area will be disturbed at the same time. Since construction will progress over a period of time, reclamation will proceed along the route at varying times, reducing the amount of exposed acreage.

Only a percentage of the soil eroded from the disturbed areas will actually be delivered to a stream. The amount of soil delivered to the stream is related to the size of the watershed, the distance between the construction area and the stream, the degree and shape of the slope between the construction area and the stream, the texture of the eroded material, surface roughness, and other factors. The fraction of the gross amount of eroded soil that actually reaches the stream is known as the sediment delivery ratio. As discussed in Appendix D, sediment delivery ratios were estimated for the three alternative alignments and range from 25 to 42 percent. From the sediment delivery ratio and the mean annual river flow rate (321,000 acre-feet at Tongue River Dam), a corresponding increase in TSS in the Tongue River was estimated. Table 4-22 presents the results of the analysis.

Table 4-22. Annual Worst-Case Increase in TSS, Tongue River

Alignment	Estimated Soil Loss (tons/yr)	Sediment Delivery Ratio	Increase in Sediment Load to River (tons/yr)	Increase in TSS Concentrations (mg/L)
Western	12,750	0.37	4,718	11
Four Mile Creek	11,278	0.25	2,820	6
Original Preferred	9,583	0.42	4,025	9

Using the worst-case gross erosion estimates, short-term average annual increases in TSS estimated for the Tongue River range from six mg/L for the Four Mile Creek Alternative to 11 mg/L for the Western Alignment. This compares to average measured TSS concentrations of

29 mg/L and 362 mg/L in the Tongue River at the dam and Miles City, respectively (see Section 2.4).

Although the sediment delivery is presented as an annual average, delivery of eroded sediment to the river would occur primarily during periods of rainfall and snow melt runoff. Thus, for these short periods, the concentration increase in the Tongue River could be considerably greater than the average numbers. During base flow conditions, when there is no surface runoff occurring, there would be no increase. During runoff conditions, the TSS levels in the river would tend to be naturally elevated. Although the actual concentration increase during those times would be greater than average, the impact would be lessened because the natural level also would be higher. A potential long term impact could be the deposition of sediment and formation of sand bars in the river channel near the mouths of the side drainages.

In contrast to the worst-case estimates presented above, BMPs which TRRC proposes to use and the progression of reclamation during construction would reduce the sediment erosion and delivery significantly. It is estimated that at least 50 percent of the sediment delivery will be reduced by these practices, with a corresponding decrease in estimated TSS increases.

Changes in Surface Drainage Patterns and Aquifers

Construction of the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment should not significantly affect surface drainage patterns. The installation of properly sized culverts and the maintenance of those culverts by clearing debris would allow water to follow its normal course. Construction of the railroad may cause some water to accumulate at the toes of cut and fill slopes. However, the construction of simple ditches at such points would effectively allow water to drain into the appropriate stream.

Construction of the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment should not impact the groundwater aquifers. TRRC plans to conduct geotechnical studies during the design phase of construction to determine the depth to the groundwater table; cuts would be designed to be above the groundwater table.

All perennial streams within the 17 mile segment are local groundwater discharge points (ICC, 1992). Therefore, if for any reason an excavation is required in an alluvial area, any effects would be limited to the immediate locale. There should be no effect on groundwater quality or quantity in the shallow alluvial aquifers.

Bridge and Culvert Construction

The Western Alignment requires the construction of two bridges, one that crosses the Tongue River near Milepost 1.0 and a 100 foot long bridge to cross S566 near Four Mile Creek. Preventive measures would be taken to minimize the TSS increases resulting from such activities. Some activities which are part of the construction process (such as installation of cofferdams to isolate and dewater a work area) will, in themselves, provide controls against excessive disturbance of sediment and associated TSS increases.

These cofferdams will be constructed from sand bags and/or other materials that will allow the flow of water but will inhibit sediment from leaving the construction area. TRRC proposes to use "silt fence" or cloth to reduce the amount of TSS from entering the main flow of the river. Also, TRRC plans to construct the S566 bridge during low flow or no flow stream conditions to further reduce the amount of TSS entering the Four Mile Creek.

Similar measures would be used for constructing bridges and stream crossings for the Four Mile Creek Alternative and the Original Preferred Alignment. However, the Original Preferred Alignment would require extensive soil erosion and sedimentation control measures because of the proximity of the alignment to the Tongue River and the number of bridges (total of five) required.

The Western Alignment and Four Mile Creek Alternative may require driving rubber-tired heavy equipment into the river in order to construct the cofferdams, piers, abutments, etc., associated with construction of the one Tongue River bridge. In some cases where piers, abutments, and/or foundations are required, steel "sheet pilings" may be driven into the river bottom to form an impervious wall around the site of the foundation. The sheeting must be driven into competent soils, potentially as far as 40 to 50 feet, thus requiring heavy equipment for this phase of the work. The top of the sheets will be left above the water surface so the area in the middle can be pumped dry for the installation of the pier or foundation. Water pumped from these areas will not be returned to the Tongue River directly. Stilling basins for this water may be used to allow sediment to settle. If sheet pilings are required, they usually become part of the formwork when the final concrete is poured (ICC, 1992). Similar measures would also be taken during construction of the bridges for the Original Preferred Alignment.

The Original Preferred Alignment is different from the other two alignments because of the construction of a tunnel. Two bridges would be required to provide access to the tunnel; there is no flat ground on the tunnel side of these bridges in which to operate heavy equipment or to build bridge pilings. A benched area might need to be built on the cliff side either by cutting into the sandstone walls, or by using rock riprap as fill material. The greatest impact to the river would come from the abutment construction where rubber-tired cranes would be driven into the river in order to install the bridge spans. The only way to approach the tunnel site would be to drive across the river. One or two river crossing sites would have to be designated. Once the bridge is constructed, the tunnel would then be bored using the bridge for access. All material removed during tunnel construction would be taken back across the river on the bridge. Bridge construction at these two sites could result in temporary but significant increases in TSS downstream (ICC, 1992).

The Western Alignment along with the other two alignments would require the placement of culverts across non-perennial streams. Short and long term impacts to water quality can occur from the improper selection and placement of culverts across non-perennial streams. Specifically, selection of a culvert with too small a diameter, placement of the culvert in a stream during periods of flow, and failure to adequately stabilize fill slopes could result in short term impacts to the water quality. Improper placement of culverts during the construction phase of the project could create a condition whereby the sediment transport capacity of a particular reach of stream would be altered. This situation, called "nonequilibrium," could have a long term impact on water quality. The TRRC would select culverts ranging in diameter size from 24 inches to 120 inches, depending upon the size of streams and upon the heights of fill. The culverts would be of sufficient size to withstand a 25-year flood event and generally would be installed during times of no or minimal streamflow, thus reducing the chance of increasing TSS in the stream. Moreover, stream banks adjacent to culverts would be seeded and mulched in order to stabilize slopes as rapidly as possible and thereby reduce soil erosion. In some cases, the use of riprap would be necessary to ensure slope stability. These measures should reduce the likelihood of impacts to water quality at stream crossings.

Impacts to Flood-Prone Areas

The only floodplain encroachments that may be considered potentially significant for the Western Alignment, Four Mile Creek Alternative and Original Preferred Alignment would be the previously noted river and stream crossings. If properly designed, the river crossings should not alter the 100-year flood plain. Appendix D presents a hydrologic analysis report and approval letter from the State of Montana that construction of bridges over the Tongue River for the

Original Preferred Alignment will not cause any significant additional flooding and the effects of the bridges would be insignificant.

Encroachments on the flood plain would not cause additional threat to human life from flood waters. Disruptions to transportation for any of the alignments would occur only if a greater than 100-year flood event destroyed part of the track. Existing transportation systems should not be additionally threatened. Provision of proper flow capacity would ensure that bridges do not affect the natural moderation of flood flows. Other than short term increases in suspended sediment and turbidity, the crossings should not affect water quality or aquatic life. Bridge construction for all three alignments is not expected to result in adverse impacts to groundwater recharge, wildlife, open space, scientific study, outdoor recreation, agriculture, aquaculture, or forestry within the designated flood plains.

Water Consumption During Construction

Water is needed for the construction of the alignments. Table 4-23 presents the estimated water usage in acre-feet (af) for constructing the three alignments.

Table 4-23. Estimated Water Usage During Construction for the Three Alignments

Alignment	Water Usage for Construction (af)
Western Alignment	1,328
Four Mile Creek Alternative	597
Original Preferred Alignment	795

One possible source of water is the Northern Cheyenne Tribe's new reservoir water storage portion of the Northern Cheyenne-Montana Water Rights Compact. The Tribe has an existing water purchase contract for 7,500 acre-feet per year (afy) that will increase by 20,000 afy when Tongue River Dam repairs are completed. Another source of water is the Tongue River Water Users Association. The Association has 32,500 afy of stored water rights (MDNRC et al., 1996). During the non-irrigation season, there also may be water available for a temporary water use permit if flows in the Tongue River exceed the Department of Fish Wildlife and Parks' instream reservation.

The average annual discharge for the Tongue River below the dam is 321,000 afy (MDNRC et al., 1996). The water usage presented in Table 4-23 accounts for the full construction period. Even though construction is likely to occur during the same time as irrigation season (May-to-September), the construction water usage is not considered a significant water withdrawal. For the Western Alignment, it would be roughly 0.13 percent of the annual discharge. The only time where it may be considered significant would be during unusual climate conditions (i.e., drought).

4.8.2 Operation and Maintenance

Operation and maintenance activities for the Western Alignment as well as for the Four Mile Creek Alternative and the Original Preferred Alignment may result in diesel fuel, coal, or herbicide spills into streams. Fueling of locomotives is expected to be done at Glendive and not at any point along the proposed alignments. BNSF at Glendive has a contingency plan to minimize impacts should a spill occur in the yards. Therefore, a diesel fuel spill along the railroad would occur only in the relatively rare instance of a derailment. Section 4.4 discusses in greater detail the probability of train derailments for each alignment. Coal will be hauled on unit trains, meaning that, once loaded, it will not be rehandled within the project area. Coal spills also would occur only in the event of a derailment. The possible impacts of such unlikely spills on the water quality are discussed below.

Control of noxious weeds for the Western Alignment would be required along the railroad ROW. Spraying adjacent to streams creates the possibility that overspraying or wind drift could introduce the spray into a stream. However, TRRC plans to use herbicides that are labeled as safe for use near water; also maintenance crews will strictly follow label instructions when applying the herbicide. Herbicides will not be transported via rail cars on the rail line, but will instead be transported by truck and be applied by maintenance crews. These crews could inspect and maintain riprap areas where waterways are close to the tracks to prevent the growth and spread of noxious weeds. These methods of weed control would also apply to the Four Mile Creek Alternative and the Original Preferred Alignment.

Should a derailment or a herbicide spill occur near a stream, and should diesel fuel, coal, or the herbicide make its way into the water, water quality could be temporarily impacted. As discussed in Section 4.4, the probability of a derailment is low for each alignment. Number 2 diesel fuel, being lighter than water, could coat and destroy plankton, while water soluble fractions could be toxic to aquatic life. Considering travel time in flowing streams, the effects of a floating or dissolved substance would be removed from the project area within one week. Impacts to aquatic flora and fauna are further addressed in Section 4.9.

If coal were spilled directly into a stream, it would remain in place until removed by clean-up activities or transported downstream as part of the stream's sediment load during successive flood events. Chemical water quality would not be significantly affected, but the coal could interfere with activities such as fish spawning in the Tongue River if it occurred in a shallow area used as a spawning bed (see Section 4.9). Impacts would be reduced by prompt removal of the coal from the stream bed.

The State of Montana has a Hazardous Material Response Plan. In addition to taking other steps to advise local emergency responders in the event of a spill of coal, fuel, or herbicide, the TRRC would call a designated telephone number in Helena, Montana to initiate emergency measures under this plan.

4.9 Aquatic Ecology

The NEPA process requires assessment of impacts that could occur as a result of the proposed project. This section addresses impacts to aquatic ecology. The overall potential for adverse impacts to the biodiversity of the Tongue River ecosystem and its functions are addressed in Section 5.9.

4.9.1 Construction

Impact to Aquatic Organisms

The upper portion of the Tongue River (Fishery Zone V) contains aquatic invertebrates that are adapted to the relatively cold, clear water that is released from Tongue River Dam (Gore, 1976). This is the portion of the river that would be impacted by TRRC bridge construction and potentially impacted by construction in areas to be filled that are adjacent to the river. Construction of five bridges under the Original Preferred Alignment and one bridge under the Four Mile Creek Alternative and Western Alignment would impact this reach of the river. The temporary increases in TSS that would result from such construction may cause a temporary increase in downstream drift of aquatic invertebrates, and a resulting lowering of invertebrate populations in the construction area. When construction is complete, and the fine sediment has been flushed from the substrate, recolonization of macroinvertebrates would be expected to occur.

Impact to Fish Populations

Temporary impacts to fish populations from construction of the three proposed alignments potentially could occur primarily as a result of increases in TSS, although such impacts are unlikely to be long term. The impacts of sediment on fish are well documented in the literature (Iwamoto et al., 1978; Cordone and Kelly, 1961). Sediments have the potential to affect fishes by (1) clogging and abrading gills and other respiratory surfaces, (2) adhering to the chorion of eggs, (3) providing conditions conducive to the entry and persistence of disease related organisms, (4) inducing behavioral change, (5) entombing different life stages, (6) altering water chemistry by the adsorption of chemicals, (7) affecting utilizable habitat by scouring and filling of pools and riffles and changing bedload composition, (8) reducing photosynthesis and primary production, (9) affecting intragravel permeability and dissolved oxygen levels which effect egg and embryo stages of salmonids which develop within the gravel, and, (10) affecting the fishing for and the catchability of sport fishes.

Smallmouth bass spawning is widely dispersed throughout the Tongue River. Northern pike spawning habitat is probably more scarce in the Tongue River. Downstream, outside of the project area, Hanging Woman Creek is a known spawning area for smallmouth bass. However, it is not known if spawning areas are located in the project area.

Construction could temporarily deter fish movement through the construction zone. Sensitive fish species may suffer from gill irritation due to increases in sediment loads during the construction period. Temporary or permanent loss of one spawning area for smallmouth bass may or may not have an impact on total smallmouth bass populations in the river. However, because spawning habitat is probably more scarce for Northern pike, impacts to these fish may be more significant. The Western Alignment and Four Mile Creek Alternative each have only one river crossing where as the Original Preferred Alignment has five river crossings. The Western Alignment and the Four Mile Creek Alternative would have less potential impact to fish populations. As discussed below, appropriate mitigative measures can substantially reduce these impacts.

Mitigative Measures for Sedimentation Impacts

The proposed bridge crossings for the Western Alignment and Four Mile Creek Alternative would only result in a temporary increase in TSS and thus have little impact on aquatic life. The construction of the bridges for the Original Preferred Alignment have a greater potential to impact Tongue River fish populations because of the lack of access and the steepness of the slopes on the east side (tunnel side) of the river.

The possibility of spawning locations existing in or downstream from bridge crossing zones can be evaluated using site-specific sampling prior to construction. If spawning areas are found at bridge crossings, impacts could be minimized by scheduling construction around the periods of April to June.

In addition, impacts can be minimized by taking all reasonable precautions to reduce sediment entering streams. Some proposed precautions are (1) disposal of all construction debris on land to prevent its entry into a waterway or wetland, (2) careful operation of equipment for handling and conveying materials to prevent dumping or spilling materials into the water, (3) placement of all dredged or excavated materials (except for that required for cofferdams, abutments, piers, foundations, etc.) on an upland site above the ordinary high water line to prevent their return to the waterway (4) careful handling of petroleum products to prevent their entry into the water (5) limited clearing of vegetation, (6) use of silt fencing to reduce sediment runoff from construction areas, and (7) reseeding with indigenous vegetation of disturbed areas.

Impact of Fuel and Chemical Spills From Heavy Equipment

A variety of effects of petroleum products have been documented to occur in natural waters after oil spills. These include: (1) acute toxicity to aquatic life, (2) chronic toxicity to aquatic life, and (3) bioaccumulation of petroleum products in fish and subsequent tainting of fish flesh (Phillips n.d.). The acute toxicities of diesel fuel, and common solvents found in diesel fuel, to freshwater fishes are relatively low. Oil spills in open waters often do not result in acute fish kills. However, some toxicity of small fishes or invertebrates may occur in shallow, near shore areas where oils are in close contact with the bottom. Additionally, small fish are more sensitive to oil and oil products than are large fish (Phillips, n.d.). Data indicate that the sensitivity of fishes to oil decreases with time of exposure because the fish are able to synthesize enzymes needed to metabolize and excrete the toxic compounds (Bax, 1987).

Chronic toxicity criteria to protect freshwater aquatic life have not been developed for all the solvents present in diesel fuel. Chronic affects on fish observed after exposure to various oil products include delay in hatching, disruption of feeding behavior, deformed larvae, and an increased rate of respiration, indicating stress (EPA, 1976). However, the above effects were observed during laboratory experiments when the oil was continually present.

Tainting of edible flesh in fish is a frequently encountered problem with oil spills. Diesel oils contain many of the most odorous components of oil and hence are among the most likely to taint fish flesh (Bax, 1987). The EPA (1976) indicates that tainting from petroleum products occurs at concentrations that are far lower than those constituting a human health concern.

The maximum amount of fuel that is likely to spill into the Tongue River at one time during construction is 1200 gallons. This is the amount of fuel carried by a "service truck" which fuels heavy equipment. These trucks will also carry approximately 200 gallons of oil, solvents, and other lubricants when full. A large loader or bulldozer can carry 300 gallons of fuel in its tanks when full (ICC, 1992). A mitigation measure to prevent fuel spills would be to ensure that all refueling of equipment occurs well away from a water body.

Alteration and/or Loss of Habitat Because of Flood Plain Restriction

TRRC plans for its bridge crossing of the Tongue River to involve placement of low piers on either bank of the river—not in the river. A proper bridge design, with the provision of sufficient flow capacity, should prevent any major alteration of the flood plain and, thereby, should insure against the loss of aquatic habitat. The timing of the railroad grade construction to avoid peak discharge periods, and the stabilization of the railroad bed soon after its completion, would help to prevent impacts to the flood plain and to aquatic resources.

Review of the Resource Values of the Various Segments of the Stream for Sports Fishery, Habitat, and Species

The Tongue River is primarily a smallmouth bass fishery. This fishery is self-reproducing and is distributed throughout the length of the river. There is a backwater area near the proposed bridge for the Four Mile Creek Alternative that potentially could be a smallmouth bass spawning and rearing area. The reach of the Tongue River directly below the Tongue River Dam contains rainbow trout and a few brown trout. Trout fishing is limited to the clearer, lower temperature stretch of the river just downstream of the dam. The rainbow trout fishery is maintained with hatchery stock and little over winter survival occurs. The mouth of the Tongue River is a spawning stream for Yellowstone River shovelnose sturgeon, burbot, paddlefish, and blue sucker. Northern pike are also a popular sport fish occurring in the river.

The quality of the recreational fishing may be degraded on a localized basis during construction of the bridge crossings. Additional turbidity during construction of the TRRC could result in fish being unable to see bait or lures which are being used by anglers. In addition, fish behavior may be modified due to the disturbance of the aquatic environment. Under the Four Mile Creek and Western Alignments, there would be fewer bridges and thus less potential for impact. It should be noted that angler opportunity in the Tongue River is potentially dictated by available public access points, since access is largely controlled by private landowners.

Access to the river may be impaired under the Original Preferred Alignment in those areas where the railroad is in between the river and the Tongue River road. There would be no restriction of access under the Western Alignment. There may be a restriction of access to fishing near the bridge at Four Mile Creek under that proposed alternative.

4.9.2 Operation and Maintenance

Impact in the Event of Fuel and Chemical Spills

The impacts of diesel fuel on the aquatic environment are described in Section 4.9.1. The impact of a fuel or chemical spill on the aquatic environment will depend on the type and quantity of chemical spilled, the flow in the Tongue River at the time of the spill, aquatic resources present in the river in the area of the spill, and the clean-up procedures employed.

The primary commodity hauled by the TRRC trains will be coal. Unlike typical mixed freight trains, the only fuel or chemicals that will be carried are those that are needed for the operation of the train. These locomotives would carry a maximum of 9600 gallons of diesel fuel. However, it should be noted that these locomotives will probably be fueled in Glendive, Montana, and as a result would have less than 3000 gallons of fuel at the river crossing (ICC, 1992). Fuel spills resulting from derailments are less likely on the Western Alignment and Original Preferred Alignment than on the Four Mile Creek Alternative with its much steeper grade.

In the event of a fuel spill near the Tongue River, impacts would be confined to the area of the spill and downstream. Small fish and aquatic invertebrates would be most sensitive to any chemical spills.

Impact from the Use of Herbicides in Maintaining the Right-of-Way

The impacts from the use of herbicides to maintain the ROW would be dependent on the type of herbicide used, the application procedure, the weather at the time of application, and the proximity of the ROW to the river.

The possible overspraying and wind-drifting of herbicides should not introduce toxic substances into the river in amounts that would be toxic to aquatic life. The impacts of herbicide use should be minimized because TRRC plans to strictly adhere to the label instructions and to use herbicides labeled as safe for use near water. Additionally, where possible, mechanical means would be used near water. Potential impacts to the Tongue River are greatest for the Original Preferred Alignment, less for the Western Alignment and least for the Four Mile Creek Alternative because of their respective distances from the river.

Impact to Aquatic Organisms Due to Coal Dust from Trains

Coal is a relatively inert and insoluble substance. There is unlikely to be any chemical effect to aquatic organism from coal dust given the limit of exposure of the railroad to the Tongue River and associated creeks and draws.

In the event of a train derailment at a river crossing, a large amount of coal could potentially enter the river. See Section 4.4 for more discussion on the probability of train derailments for each alignment. Most of the damage that would occur from such an event would be from the coal dust which washes off the coal and increases TSS, and from the impact of heavy equipment operating in the river during the clean-up. Assuming a prompt and thorough clean-up of spills, these impacts should be of a short term duration in a limited area of the river.

4.10 Terrestrial Ecology

The NEPA process requires assessment of impacts that could occur as a result of the proposed project. This section addresses impacts to terrestrial ecology. The overall potential for adverse impacts to the biodiversity of the Tongue River ecosystem and its functions are addressed in Section 5.9.

Construction and operation of the three proposed alternatives would directly and indirectly affect vegetation and wildlife in the project area. Direct impacts include the removal or alteration of vegetation along the ROW and the consequent loss of some wildlife habitat and displacement of some wildlife. Other potential impacts to wildlife include the destruction of relatively nonmobile species, loss of animals due to collision with trains and maintenance vehicles, creation of a barrier to some species, potential damage or elimination of habitat by dust, herbicide, and fire, and disturbances to nearby animals. Indirect impacts include general demands on the environment which are associated with increased population or use of the area and improved roads. These may include increased county road wildlife-vehicle collisions, displacement of wildlife by recreationists, and increased poaching and hunting.

Because the entire railroad right-of-way would be fenced to keep cattle off the tracks, the ROW could act as a barrier to the natural movement and migration of animals, such as pronghorn, that may not find a way through or around the fencing and that could not or would not use cattle underpasses. These impacts are discussed in detail below.

4.10.1 Construction

Vegetation

A determination of the total affected vegetation was made using aerial photography, USGS 7.5-minute maps and field inspection. Using these aids, it was determined that the construction of the Original Preferred Alignment would directly affect roughly 328 acres along the ROW. The acres lost to the ROW include a mixture of pine/juniper, grassland/sagebrush, agricultural, prairie, deciduous tree/shrub, and breaks habitat. The specific acreages that would be lost and their percentage of the total acres removed are shown in Table 4-24. A total of 455 acres would be affected with the Four Mile Creek Alternative. The acres lost on this alternative include the same types of habitat as the Original Preferred Alternative. A total of 363 acres would be affected by the Western Alignment. The acres lost on this alternative includes the same types of habitats as the other two alternatives.

No threatened or endangered plant species or "species of concern" as listed on the Montana Natural Heritage Program (MNHP, 1998) have been identified in the area along the ROW for any of the three alternative routes. However, a field search of the alignment should be undertaken during final phase engineering to identify unique plant species and to implement appropriate mitigative measures.

The most important mitigative measure for impacts to vegetation is proper planning for the reclamation of disturbed areas. A revegetation plan specific to the proposed ROW corridor would be prepared prior to disturbance. Revegetation would be performed in those areas containing adequate substrate and grade for revegetation after final enginering and grading. The implementation of the following measures would reduce the level of impact from the rail line's construction:

(1) Revegetation quickly following disturbance.

(2) Selection of suitable species (i.e., slender wheatgrass, streambank wheatgrass, hard fescue, blue grama), by an analysis of site soil characteristics, precipitation patterns, and slope and aspect.

(3) Selection of suitable planting dates, by an analysis of site seed requirements.

(4) Use of non-native plants if vegetation begins at a time when native species cannot be planted successfully.

(5) Use of species not palatable to wildlife.

(6) Selection of appropriate planting methods, i.e., drill-seeding, hydro-seeding, broadcast-seeding, etc.

(7) Consideration of erosional problems in advance of planting. For example, cut and fill slopes should be reduced to the flattest angle practical. Slopes could be terraced where the reduction of those slopes is impractical. The mulching and planting of trees and shrubs in containers near stream banks could speed revegetation and, thus, control erosion.

(8) Consideration of non-vegetative erosion control measures such as erosion control mats or soil tackifers in particularly sensitive areas.

(9) Periodic inspection of reclaimed acres, including an outline of follow-up measures to insure successful reclamation, especially in areas where soils, slope, or topography impede revegetation.

Wildlife

Construction of the Western Alignment, Original Preferred Alignment, and the Four Mile Creek Alignment potentially would affect primarily two general groups of wildlife—big-game and birds (upland, waterfowl, and raptors).

Deer and Pronghorn—The construction phase of the project will remove some deer habitat (primarily pine/juniper and big sagebrush/grassland) and pronghorn habitat (primarily the big sagebrush/grassland, and additionally for the Four Mile Creek Alternative, prairie habitat). These are the most common habitats in the project area for all three alternative routes (see Table 4-24). Impacts to pronghorn habitat would be greater for the Four Mile Creek Alternative than for the Western Alignment.

Other construction-related impacts that could occur along any of the three alignments include the displacement of wildlife due to increased noise and dust in the construction corridor. The proposed construction season is expected to extend from April to October, a period of comparatively low stress for wildlife. However, should the construction season extend into the

Table 4-24. Disturbed Acres by Habitat Type for the Western Alignment and Alternative Routes

Habitat Type	Western Alignment	Four Mile Alternative	Original Preferred Alignment
Pine/Juniper	163.2	132.6	98.5
Silver Sagebrush/Grassland	53.6	36.7	43.7
Big Sagebrush/Grassland	81.5	84.1	120.7
Skunkbush/Sumac/Grassland	0.0	14.2	2.0
Breaks	34.6	28.6	43.2
Agriculture/Disturbed Sites/Pasture	0.0 4.9	0.0 16.2	0.0 13.8
Greasewood/Grassland	0.0	0.0	0.0
Prairie	13.3	100.1	4.2
Deciduous Tree/Shrub	1.0	5.9	2.9
Irrigated Farm Land (In use)	3.2	2.0	2.7
Irrigated Farm Land (Not in use)	3.8	2.0	2.3
Non-Irrigated Farm Land	4.9	33.6	0.0
Totals	364.0	456.0	334.0

Compiled by Westech & Mission Engineering 2/27/98.
Note: Total acres are actual disturbed areas which include most but not all of the ROW.

winter during periods of higher stress, this could affect the mortality rate of area wildlife. However, any extension of construction into winter months is more likely to occur during mild winter conditions when the relative amount of stress for this season would be less.

Other possible construction-related impacts could be increased "road-kills" due to traffic increases on the Tongue River Road. Construction work centers along the rail line could temporarily displace deer and pronghorn from those areas. Hunting and poaching pressure on local deer and pronghorn populations could increase. Increased recreation pressure (such as camping and hiking) associated with the construction work force may further displace wildlife and could negatively affect reproductive success (natality).

Available literature suggests that there may be fewer deer and/or wintering deer on the Four Mile Creek Alternative than the other two alignments. In the summer/fall deer are attracted to the agricultural habitat or the bottomlands of the Tongue River Valley. Pronghorn habitat is most abundant in areas surrounding the Four Mile Creek Alternative (USDA-FS, 1978; Olson-Elliott and Associates, 1980 a-b; Westech, 1982-1989). .

The overall impact of construction-related displacement on local deer populations should not be great and should be relatively short-term for the duration of construction through a particular area. Some impacts to deer and pronghorn could be mitigated by timing construction so that important use areas (wintering and fawning) are not disrupted. Pre-construction surveys can be conducted to identify as many of these areas as possible. Only in those areas where potential impacts would significantly, adversely affect deer and pronghorn population abundance and distribution would there be a need for mitigative scheduling of construction.

Upland Birds—Impacts to upland game birds from construction of the railroad are likely to be the same for all three alternatives. Some habitat for sharp-tailed and sage grouse, pheasant, and gray partridge could be removed. Some sharp-tailed grouse leks could be affected by construction at the north end of the project area, either by removal or displacement. Locations of dancing grounds from Birney to the terminus are not well known, so impacts to grouse in this portion of the line are difficult to determine. Some pheasant and gray partridge habitat would be disturbed, and some birds would probably be temporarily displaced from the vicinity of construction. Merriam's turkeys would not likely lose much habitat, but birds accustomed to moving periodically from uplands to the riverbottom areas, and birds that winter along the Tongue River, may be displaced by noise and activity.

Overall impacts to most upland bird species from construction should be short-term for the duration of construction. However, native grouse populations in the vicinity of the project area have been depressed for several years. Construction activities on or near dancing grounds and nesting areas could affect local populations of grouse by interfering with reproduction and could reduce overall population numbers with increased hunting. Only in those areas where potential impacts would significantly, adversely affect gamebird population abundance and distribution would there be a need for mitigative scheduling of construction.

Some impacts to upland game birds can be mitigated by scheduling construction not to conflict with wintering, nesting and brood-rearing areas during critical months. These areas can be delineated by pre-construction surveys.

Raptors, Waterfowl, and Other Birds—Several raptor species nest, hunt, or winter on or near the area proposed for construction for the Western Alignment. Red-tailed hawks, great-horned owls, and American kestrels commonly nest on or near the river bottom. These, and other nesting raptors may be temporarily displaced, and production may be affected by increased stress. Most other raptor species found on or near the project area may hunt in the general vicinity of the proposed Western Alignment. Some hunting and roosting habitat may be removed and some prey species may be lost or displaced. Some raptor species would be displaced, probably until construction is completed. Given the distance from the Tongue River, it is likely that impacts to raptors during the winter months and the spring nesting season would be lowest for the Four Mile Creek Alternative and greatest for the Original Preferred Alignment. The Western Alignment likely would have impacts at a level in between the other two alignments.

Some construction-related impacts can be mitigated by scheduling construction so that it does not conflict with known raptor nest sites between the time of nest territory establishment and fledgling of young birds. Only in those areas where potential impacts would significantly, adversely affect raptor populations abundance and distribution would there be a need for mitigative scheduling of construction.

Waterfowl tend to congregate in the two to three mile section of the Tongue River just north of the Tongue River Dam. Since this section of the river never freezes, it serves as an important wintering area for waterfowl. Waterfowl using the Tongue River or ponds near the area of construction for wintering, nesting or resting may be displaced in the immediate area during the period of construction. This may have a short term effect on waterfowl if displacement takes place during winter months or during spring and summer months when geese and ducks are nesting in vegetation between the river's edge and the uplands. As more fully described in Section 4.9.1, potential spills of materials such as gasoline, diesel fuel, lubricating oil, solvent, etc., could negatively affect waterfowl species and shore and wading bird species. Herons and other colonial nesting birds such as cormorants may be displaced from nest sites and fishing areas during construction. Construction of the Four Mile Creek Alternative and Western Alignment would avoid most of the more sensitive waterfowl wintering nesting areas below the dam. The consequent impacts would thus be less for those two alternatives than the Original Preferred Alignment.

Scheduling construction so as not to conflict with breeding, nesting, and brood-rearing periods could mitigate some impacts to waterfowl, herons, and other colonial nesting birds and shore birds. Only in those areas where potential impacts would significantly, adversely affect Tongue River waterbird population abundance and distribution would there be a need for mitigative scheduling of construction.

Other Mammals—Small mammal populations found within the area of construction for all three alignments would be displaced or eliminated during construction. Reclamation along the ROW would initially attract small mammals to the revegetated areas. Medium-sized animals such as yellow-bellied marmots, black-tailed prairie dogs, skunks, and porcupines would be displaced from the disturbance area until after construction. Predators and furbearers found in the project area could be displaced until the end of construction.

Threatened and Endangered Species

As noted in Chapter Two, the FWS has identified four "species of concern" in the project area—the bald eagle; the peregrine falcon, the black-footed ferret, and the pallid sturgeon. When endangered species may be present and when these species may be adversely affected by a proposed project, FWS requires the preparation of a Biological Assessment. A Biological Assessment (Appendix H) was prepared in support of the Final EIS (STB, 1996a) that addressed the Original Preferred and Four Mile Creek Alignments. The results of this Biological Assessment should be sufficient for FWS review of the Western Alignment, because those portions of the project area that were evaluated in the Biological Assessment include the area for the Western Alignment, and the environmental and ecological conditions in the project area have not changed significantly since the completion of the Biological Assessment.

A summary of the conclusions in the Biological Assessment regarding possible impacts of the three proposed routes on "species of concern" is presented below.

Bald Eagle—Construction of the Western Alignment and the Four Mile Creek Alignment should not result in the removal of trees that could serve as bald eagle roosting and nesting habitat, except possibly in the areas of bridge crossings on the Tongue River. Since much of the Original Preferred Alignment would be constructed in the Tongue River Valley bottom, trees that could serve as roosting and nesting habitat for bald eagles would likely be removed. An additional direct effect would be the loss or displacement of such prey species as fish, waterfowl, small and medium-sized mammals, and ungulates (see Sections 4.9 and 4.10 for a discussion of impacts on such fish and wildlife). Because of increased noise, dust, and activity associated with rail line construction, individual bald eagles known to use the Tongue River upstream of the existing county road bridge could be displaced.

There were two locations of active bald eagle nests in the project area that were identified during the Biological Assessment (Westech, 1995) field work in 1992. More recent surveys suggest that only one of these nests currently exists (approximately 2.5 miles north of the Tongue River Dam).

This nest is within the survey corridor of TRRC's Original Preferred and Western Alignments. It is approximately 1,000 feet west of the centerline of the ROW for the Original Preferred Alignment and 4,000 feet west of the Western Alignment. Given the narrowness of the Tongue River Valley at this point, TRRC construction activities for the Original Preferred and Western Alignments could affect the use of this nest, especially if construction activities occurred in early spring. Mitigation of this impact would require timing TRRC construction activities in this location during a period of inactive use of the nest. The Four Mile Creek Alternative would avoid this section of the Tongue River Valley.

Peregrine Falcon—The construction and the operation and maintenance of any of the three alignments could have an impact on the peregrine falcon. However, there has been only one recorded occurrence of a peregrine falcon in the project area. While falcons may occasionally migrate through the area, the peregrine is not known to hunt or nest in the project area.

Black-footed Ferrets—The effects of the proposal on black-footed ferrets would depend on whether this species is found in any prairie dog towns within the project area and the effect of construction of the proposed rail line on the prairie dog towns. No resident black-footed ferrets have been observed in the Tongue River Valley. However, prairie dog towns may exist within the project area and, since black-footed ferrets may potentially occur in prairie dog towns, the analysis of direct and indirect effects to the ferrets requires the consideration of effects to prairie dogs and prairie dog towns along the three alignments.

FWS has suggested the possibility that any prairie dog town, or towns, affected by the Extension approved in 1996 could be within the boundary of the 10,000-acre prairie dog complex recently located by the BIA/NCT inventory. This prairie dog complex, known as the Northern Cheyenne complex, has been identified as within the boundaries of the Northern Cheyenne Indian Reservation itself. However, this area is outside of the project area considered here.

The identification of the Northern Cheyenne complex, at some point, may be extended to include the prairie dog towns within the Tongue River Valley outside of Reservation boundaries. Prairie dog towns commonly expand into the Tongue River Valley until local landowners, viewing them as pests, take measures to eliminate them. It should also be noted that prairie dogs have been recently reduced in numbers by effects of the plague.

If the FWS or the BIA/NCT inventory team were to include the Tongue River Valley prairie dog towns as a part of the complex, those towns would probably represent a very small portion of the complex. The effects to Tongue River Valley prairie dog towns resulting from rail line construction and operation should not have significant effects on this vast complex. The complex as it is currently identified on the Northern Cheyenne Indian Reservation alone is ten times the size identified by FWS as a viable ferret re-introduction area.

Although no black-footed ferrets have been observed in the project area, the potential presence of prairie dogs along the rail line suggests the possibility of ferret habitation. As noted in Chapter Six, if the Western Alignment proposal is approved, TRRC would conduct a survey for prairie dog towns during the final engineering. During the course of the survey, consultation would continue with the FWS regarding the status of prairie dog complexes within the ROW. If a complex greater than 80 acres is discovered, a survey for black-footed ferrets would be conducted pursuant to the guidelines established by FWS.

If prairie dog towns are located within the Western Alignment project area, parts of them could be destroyed if the ROW is constructed through an area inhabited by the animals. Like other small mammals, prairie dogs could be displaced from disturbance areas until after construction. Some prairie dogs could be killed by the operation of construction equipment.

The direct and indirect effects to prairie dogs represent short-term losses and should not affect local populations of prairie dogs, thus, causing no significant impacts to potential black-footed ferret inhabitants.

Pallid Sturgeon—The pallid sturgeon is not known to occur, nor is appropriate spawning habitat available, in the reach of the Tongue River associated with the project area. No direct or indirect impacts of the three proposed routes would affect this species.

4.10.2 Operation and Maintenance

Vegetation

The principal impacts to vegetation from operation of the TRRC for all three alignments would be caused by the use of herbicides, range fires, and possibly coal dust.

The County Weed Control Act (7-22 MCA 2101-2153, 1989) requires the control of noxious weeds along all rights-of-way. Weeds may be sprayed with herbicides to inhibit the growth of unwanted vegetation. The use of these herbicides could damage native plant species and could increase the likelihood of range fires due to the presence of dead and dying vegetation. The use of mechanical means to control weeds would reduce the extent of impact.

As noted in Section 4.1 "Land Use," ranchers in the project area have expressed concern about the increased threat of range fires from passing TRRC locomotives. While posing a threat to ranchers, fires from railroad operations account for only about five percent of all range fires in Montana and in any event, may have a long-term beneficial effect on area vegetation (see Section 4.1). The TRRC, however, plans to implement a rigorous program of fire prevention and suppression along its ROW.

Coal dust emissions from TRRC trains are expected to be small. The Montana Air Quality Bureau has determined that coal dust would not constitute a problem. See Section 4.11 for more discussion on air quality. Consequently, little effect on vegetation is expected from coal dust.

Wildlife

Deer and Pronghorn—The operation and maintenance phase of the project for all three alignments would probably continue to cause some displacement of deer and pronghorn from habitat that is adjacent to the railroad or is accessible to recreationists. Increased county road traffic may result in additional road-kills, poaching, and probably legal hunting within the project area. If the county road is to be improved at some time in the future, the likely further increase in human activity on or near the ROW may decrease reproductive success, add stress to wintering animals, and compromise the use of some important habitats on a year-round basis.

Although some deer may be afraid to cross the ROW to traditional summer-fall feeding areas, it is anticipated that most mule and white-tail deer would adapt to railroad traffic and would continue to utilize adjacent habitats. This adaptation may lead to another impact in the form of train-deer collisions. Deer would probably continue to cross the fenced ROW at locations other than underpasses and occasionally be struck, especially at night due to train lights. Some deer would adapt to the presence of underpasses and would avoid collisions.

If the ROW is fenced in such a manner as to exclude domestic livestock (especially calves and sheep), then it could represent a barrier to movement of pronghorn. Pronghorn require a fence with a bottom wire of no less than 16" from the ground; preferably a smooth strand (Yoakum, 1980). However, a bottom wire this high would also probably allow the passage of calves and sheep and thus, would not serve the needs of area ranchers. Since pronghorn occur in limited numbers downstream of the Four Mile Creek confluence with the Tongue River, a fenced ROW would probably not have a great negative affect on the limited numbers of pronghorn present. The daily and seasonal movements of the larger population of pronghorn south of this area could be disrupted or stopped by the ROW fence regardless of the alternative selected. This disruption could result in a net loss to the pronghorn population in that area.

Upland Birds—Most of the anticipated impacts to upland birds would be associated with the construction phase of the project. However, operation and maintenance may affect upland birds from train and vehicle collision, increased hunting and poaching. It is expected that there would be an unmeasurable small net loss to upland bird populations from operation and maintenance of the railroad. Because of the relative amounts of upland bird habitat that would be disturbed by each alignment, impacts to upland birds likely would be greatest for the Four Mile Creek Alternative, less for the Western Alignment, and least for the Original Preferred Alignment.

Raptors, Waterfowl, and Other Birds—Raptors utilizing the habitats on or near the ROW for resting, nesting, and hunting would probably be displaced from those areas in the open country north of Canyon Creek for the Original Preferred and Western Alignments. Those special use areas not adjacent to the ROW would probably not be affected by the increased activity associated with the railroad. Upstream of Canyon Creek, as the valley narrows, raptors may choose not to utilize the adjacent habitats because of noise, increased human activity, and potentially lower prey base.

In areas where the railroad will pass through the Tongue River Valley, waterfowl, wading and shore birds may be displaced from nesting, brood rearing, resting or winter habitat because of the continuous disturbance associated with operation and maintenance. As more fully described in Section 4.9.2, fuel or other hazardous material spills, herbicides, fires and dust could affect waterfowl in the water or on land. Together, these potential impacts could have a negative effect on waterfowl, wading and shore birds in the immediate area. However, there would probably be no affect to regional populations.

Selection of the Four Mile Creek Alternative or Western Alignment would have a reduced negative impact to waterfowl, wading and shorebirds because, unlike the Original Preferred Alignment, these routes are largely removed from river valley wetlands and the portion of the river that does not freeze.

Other Mammals—Small and medium-sized mammals could suffer increased mortality through road-kill on the county road, and perhaps from trains if they are attracted to revegetated areas. Fires, dust, noise, increased activity, and potential fuel spills may affect existing habitat. Overall, short term losses of small- and medium-sized mammals would not affect local populations for all three alignments.

There could be some negative impacts to predators and furbearers from vehicle and train collisions; increased hunting, trapping, and poaching; displacement; potential spills of hazardous materials; and loss of habitat due to fires. There could be an unmeasurable small affect on local populations for all three alignments.

Threatened and Endangered Species

Bald Eagle—Bald eagles could be affected by the operation of trains on the proposed rail line, particularly those birds using the Tongue River canyon—the two to three miles of the river valley just north of the Tongue River Dam—during the winter months. Since the Four Mile Creek Alternative would avoid this section of the river valley, there would be few, if any, impacts on bald eagles associated with trains operating on this alternative rail line.

Bald eagles could become accustomed to the activities associated with the operation and maintenance of a railroad, although some maintenance activities could cause short-term displacement. In the canyon area, however, bald eagles could experience the effects similar to other raptors. Upstream of Canyon Creek, wintering or nesting bald eagles are attracted to the open water and waterfowl prey base, as well as to road-killed and winter-killed ungulates and smaller mammals. Bald eagles and other raptors could choose not to utilize the adjacent habitats because of train-related activities such as noise, potentially lower numbers of prey, and increased human activity. The later impact should be restricted to the specific maintenance areas and would be of limited duration, and eagles could habituate to operation and maintenance activities.

It would be possible for bald eagles to use the area of the proposed rail line north of Canyon Creek where the valley widens and perching sites are available up to 1/4 mile from the ROW. Bald eagle use of this area would be limited, however, to warm weather conditions since the river freezes along this section. If bald eagles nested in the Tongue River Valley, this portion of the river could be acceptable to nesting birds. It is distant from the proposed rail line in most places.

Since the eagles generally prefer the areas adjacent to the river, there possibly would be less disturbance to bald eagles if the Four Mile Creek Alternative is selected, given that this alignment diverges from a section the Tongue River Valley. However, even with this alternative, the proposed rail line would extend through areas that are used by raptors, including bald eagles, during the winter months.

Peregrine Falcon—There is little reason to expect that migratory peregrines would be negatively affected by the operation and maintenance of the railroad because peregrines are not known to hunt or nest the project area. If a peregrine nesting pair did make use of cliffs located between Ashland and Birney, they likely would not be affected by either the Original Preferred Alignment, the Four Mile Creek Alternative, or the Western Alignment.

Black-footed Ferrets—The effects of the operation and maintenance of the three alignments on black-footed ferrets would depend on whether this species is found in any prairie dog towns within the project area and the effect of operation of the proposed rail line on the prairie dog towns. No resident black-footed ferrets have been observed in the Tongue River Valley. However, prairie dog towns potentially may occur within the project area and, since black-footed ferrets may potentially occur in prairie dog towns, the analysis of direct and indirect effects to the ferrets requires the consideration of effects to prairie dogs and prairie dog towns along the three alignments.

As stated in Chapter Six, if the Western Alignment proposal is approved, TRRC would conduct a survey for prairie dog towns during final engineering. The impacts of operation on prairie dog towns, if any, would be increased mortality directly from trains passing through a habitat area and indirectly through road-kill on the county road. Fires, dust, noise, increased activity, and potential fuel spills could affect prairie dog's use of existing habitat during the operation and maintenance of the railroad.

The direct and indirect effects to prairie dogs represent short-term losses and should not affect populations of prairie dogs, thus, causing no significant impacts to potential black-footed ferret inhabitants.

Pallid Sturgeon—The pallid sturgeon is not known to occur, nor is appropriate spawning habitat available, in the reach of the Tongue River associated with the project area. No direct or indirect impacts of the three alternatives would affect this species.

4.11 Air Quality

Four sources of air emissions would result from the construction and operation of the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment. They include: fugitive dust from construction activities, combustion emissions from construction equipment, combustion emissions from locomotive engines, and wind blown dust from the constructed ROW. Each category is described in this section with emission estimation results presented in Tables 4-25 and 4-26. Note that these emission rates are worst case and do not account for application of controls (e.g., dust suppression). Table 4-25 shows short-term emissions on a tons per mile basis while Table 4-26 presents the emissions on a tons per mile basis from continuous operation of locomotives over each route for the entire Tongue River Railroad. Table 4-27 presents engineering assumptions and emission factor algorithms used to estimate the air emissions.

Table 4-25. Short-Term Emission Rate Estimates by Route

	Estimated Emissions by Alignment Tons/Mile/Year				
	CO	NO_x	PM_{10}	SO_2	VOC
Western Alignment (17.3 miles)					
Construction - Fugitive Dust Construction - Combustion ROW - Fugitive Dust	4.23	12.94	5.01 1.37 1.03	1.56	0.95
Four Mile Creek Alternative (29.4 miles)					
Construction - Fugitive Dust Construction - Combustion ROW - Fugitive Dust	1.49	4.56	3.70 0.48 0.82	0.55	0.33
Original Preferred Alignment (18.7 miles)					
Construction - Fugitive Dust Construction - Combustion ROW - Fugitive Dust	1.76	5.37	4.26 0.57 0.91	0.65	0.39

Notes:
- The area of construction at any one time is assumed to be equal to the total disturbed area divided by the months of construction.
- The area that may contribute to wind blown dust is assumed to be 10 percent of the total ROW.

Table 4-26. Emissions from Operation of Locomotives by Route (Tons per Mile per Year as Compared to Federal PSD Thresholds)

		Emissions in Tons/Mile/Year (Federal PSD Threshold in TPY)				
Scenario	Fuel Usage in 2005 Mgal [1]	CO (100)	NO_x (40)	PM_{10} (15)	SO_2 (40)	VOC (40)
Western Alignment	4.67	1.37	13.9	0.34	0.73	0.51
Four Mile Creek Alternative	7.15	2.10	21.3	0.53	1.12	0.79
Original Preferred Alignment	4.71	1.38	14.0	0.35	0.74	0.52

[1] Figures taken from Table 4-19.

4-27 Emission Factors

Source Type	Manufacturer	Model No.	Fuel	CO Emission Factor	NO_x Emission Factor	PM_{10} Emission Factor	SO_2 Emission Factor	VOC Emission Factor
Locomotive Line-Haul Baseline[a]	various	various	Diesel	26.6 g/gal	270 g/gal	6.7 g/gal[b]	31.2 lb/Mgal	10 g/gal
Locomotive Line-Haul per mile, 3 locomotives	various	various	Diesel	1.14 lb/mile	11.61 lb/mile	0.29 lb/mile	0.61 lb/mile	0.43 lb/mile
Locomotive Line-Haul per mile, 7 locomotives	various	various	Diesel	2.67 lb/mile	27.08 lb/mile	0.67 lb/mile	1.42 lb/mile	1.00 lb/mile
Construction Dust[c]	various	various	NA			3.91 T/acre/yr		
Const. Eq. Combustion[d]	various	various	Diesel	84.6 lb/Mgal	258.6 lb/Mgal	27.3 lb/Mgal	31.2 lb/Mgal	19 lb/Mgal
Wind Erosion[e]						0.38 T/acre/yr		

Notes:

[a] From Technical Highlights, Emission Factors for Locomotives, U.S. EPA, Office of Mobile Sources, December 1997, EPA420-F-97-051, Table 3
Factors in lb/mile are based on a fuel consumption of 6.5 gallons/mile of track. Since each train makes a round trip, this factor represents the fuel consumed for each mile of track as part of a round trip.

[b] The EPA guidance on Locomotive emission factors lists only PM. At this time is is conservatively assumed that PM10 emissions equal PM emissions.

[c] AP-42 General Construction Emission Factor for PM, AP-42 Section 13.2.2.
Because AP-42 does not include PM_{10} emission factors, the PM factor will be corrected by taking the ration of PM10 emissions to Pm emissions for a scraper.
Scraper Emissions from AP-42 Section 11.9. PM_{10} emissions are 0.60 times PM_{15} emissions. PM_{15} emissions are $6.2 \times 10^{-6}(s)^{1.4}(W)^{2.5}$ lb/VMT.
Based on default parameters for silt and weight from AP-42 Table are silt (s) = 16.4%, and Weight (W) = 53.8 tons
PM_{10} = 3.97 lb/VMT
Total PM emissions are 6.2 x 10-6(s)1.4(W)2.5 lb/VMT.
PM = 14.61 lb/VMT
Therefore, assume that for construction activities, PM_{10} is 3.97/14.61 of PM emissions or 0.271
The PM_{10} emission factor for Construction is therefore 1.2 Tons/acre/month * 0.271 = 0.326 Tons/acre/month
3.91 Tons/acre/year

[d] From AP-42 Volume 2, Table II-7.1 Emission Factors for Heavy-duty, Diesel-Powered Construction Equipment, Scraper emission factors.

[e] From AP-42, Volume 1, Table 11.9-4, Wind Erosion of exposed areas

Emissions resulting from the proposed project, regardless of alignment selection, are regulated by both the State of Montana and the EPA. These emissions include:

- Carbon monoxide (CO);
- Oxides of nitrogen (NO_x);
- Fine particulate matter (< 10 micrometers in diameter—PM_{10});
- Sulfur dioxide (SO_2); and
- Volatile organic compounds (VOCs).

Table 4-25 provides construction emissions on a per ton per mile basis, which is a common way of quantifying emissions for line sources (such as railroads and highways). Table 4-26 compares combustion emissions from the three routes for each of the five common pollutants from rail locomotive operations.

From these data it is clear that the post-construction long term operational air pollution emissions of the Four Mile Creek Alternative are greater than that of the other two routes for the pollutants associated with fuel use and combustion.

EPA has recently completed research in the areas of construction emissions and control as well as emissions factors for diesel-powered locomotives and locomotive engines. New emissions standards, adopted by the EPA in December of 1997, will result in a reduction of emissions from locomotive engines over the coming years. Best construction practices which include appropriate dust suppression measures (outlined in Chapter Six) will also result in air quality impacts which are not significant as a result of the proposed project.

4.11.1 Construction

Fugitive

Fugitive dust from construction activities refers to those air pollutants that enter the atmosphere without first passing through a stack or duct designed to direct or control their flow. Construction activities are temporary but can impact local air quality. Generally these emissions are of short duration and limited to the area of construction occurrence at that time. Fugitive dust emission estimates were estimated by using EPA emission factors.

Combustion

The second source for air pollutant emissions from construction of the proposed project is the heavy duty construction equipment activities. A worst case assumption was made that all construction activities would occur with a diesel-fueled scraper. Other equipment would also be involved in the dirt moving such as dozers, graders, and front-end loaders. However, of the vehicles involved, the scrapers produce the maximum emissions and were used in the analysis to represent the most conservative or worst case estimate.

4.11.2 Operation

Combustion

Railroad locomotives are primarily diesel powered and, similar to motor vehicles, emit products of combustion. Emission factors for locomotives were obtained from a new study completed by the EPA and emission estimates were based on fuel use. Note that new emission standards promulgated by the EPA will result in a general decline of ambient emissions from locomotives nationwide. Pollutant concentrations from diesel fuel consumption are highest directly adjacent to the rail line and would decrease rapidly at greater distances from the line.

The data presented in Table 4-26 conservatively reflect calculated emissions for fuel usage along the full track length from Miles City, Montana to the Decker area of Montana. For the various routes, this total track length ranges from 120 to 130 miles. Air emissions were calculated to reflect locomotive combustion emissions in tons per mile per year assuming a conservative length of 100 miles for all three proposed routes.

For the 1992 DEIS, TRRC modeled emissions along various routes and determined that there were no significant air quality impacts that would occur. Most importantly, the impacts from railroad operations were determined to be below significance thresholds at the Northern Cheyenne Reservation boundary, which is a protected Class I area. New Source Review thresholds for Prevention of Significant Deterioration analyses are also not triggered for the project as shown in Table 4-26. It is also important to note that all combustion emissions from locomotive engines are conservatively estimated. Should fewer engines be required, emissions will drop significantly.

ROW Wind Blown Dust

The continued operation of the Tongue River Railroad, regardless of the alignment, would result in fugitive emissions from wind blown soils. Devegetation along the ROW resulting in exposed soils can cause an increase in particulate emissions. When estimating wind blown dust, it was conservatively assumed that approximately 10 percent of the ROW would have exposed soils.

Specific calculations have not been generated for the emission of fugitive coal dust from coal cars in transit along the railroad. Although no specific numbers are available for estimating the fugitive coal dust from the rail cars, some dust could be blown from the hopper cars and affect the immediate area adjacent to the rail road. However, the Montana Department of Health and Environmental Sciences Air Quality Bureau (now the Montana Department of Environmental Quality) has stated that coal dust should settle to the bottom of hopper cars within the first few miles of the mine site and that it should not pose a threat to federal, or Montana air quality standards (Montana Air Quality Data, 1989).

4.11.3 Air Quality Impacts

Because the Western Alignment is the shortest route, total emissions will be the lowest along the Western Alignment. Based on previous dispersion modeling (ICC, 1992), all predicted concentrations fall well below the applicable federal and Montana air quality standards. The emission estimates also reflect a worst-case approach and likely overstate actual future emissions. Additionally, best construction practices and dust suppression control measures as detailed in Chapter Six will also significantly reduce the contribution of particulate emissions to the project area as a result of the proposed operation and construction of the ROW.

Emissions from slash burning and blasting were not addressed as a part of air quality assessment. Slash burning will not be practiced. Blasting, if it does occur, will be infrequent and very short term so it should not significantly impact air quality.

4.12 Noise

The Proposed Action would increase the ambient noise levels in the project area's predominantly rural setting. While the construction of the rail line would result in a short term increase in noise levels, the operation of the railroad would generate noise levels that would vary as a function of the number of trains.

4.12.1 Construction

The operation of heavy machinery in the construction of the railroad would temporarily increase noise levels in the construction area. The amount of time that work activity would occur in any one location would be limited to a few weeks. Therefore, construction-related noise impacts are short term. Measured on the "A" scale of decibel readings, the noise levels from heavy machinery typically used in rail line construction would range between 62 and 74 dBA at a

500-foot distance and between 54 and 67 dBA at a 2,000-foot distance.[18] During times of intense construction activity, the decibel readings could reach higher levels.

The analysis of potential noise impacts included an identification of "sensitive receptors." A "sensitive receptor" is defined as a residence, school, hospital, and recreation area. The analysis was undertaken by reviewing 7.5-minute USGS maps and by field verification. For the immediate project area, the sensitive receptors are rural residences, a church, and the Tongue River Reservoir State Park camping area. Noise impacts to the Tongue River Reservoir Camping Area are discussed in Section 4.12.3.

Sensitive receptors that would experience construction-related noise are presented in Table 4-28 for the Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment. The Western Alignment would affect the fewest number of sensitive receptors.

Construction-related noise impacts would be mitigated for most rural residents by the dispersal of heavy equipment along the ROW and by the avoidance of construction during evening hours and week-ends.

4.12.2 Operation and Maintenance

The operation of the Tongue River Railroad would cause some long term increase in noise for the rural residents living in the vicinity of the Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment. Decibel readings of ambient noise levels typical of rural areas range from 20 to 40 dBA. Assuming the operation of 10 roundtrip trains a day,[19] these readings may increase to 62.8 dBA, an L_{eq} measurement, or 69.2 dBA, an L_{dn} measurement[20] (ICC, 1992).

---

[18] The noise levels are based on the assumption that on a one-mile segment there would be 13 scrapers, seven bulldozers, four graders, four rollers, four trucks, one backhoe, and a vibratory tamper. All machinery would operate at full load with no attenuation. See 1983 TRRC DEIS:A6-1 and A6-15 and Interstate Commerce Commission, *Draft Environmental Impact Statement, Somerset Railroad Corporation, Construction and Operation of a Line of Railroad in Niagara County, New York*, Washington, D.C., September 5, 1980, pp. IV-40 through IV-50.

[19] The contours are based on 10 roundtrip trains which was developed for the 1992 DEIS. The current estimates are that there will be only six roundtrip trains by the year 2005. Therefore, this analysis is conservative.

[20] The notations "L_{eq}" and "L_{dn}" are decibel measurements of the average sound level experienced at a specific location during a 24-hour period. The two notations differ in that the L_{dn} measurement weighs night-time noises more heavily than daytime noise to recognize a person's increased sensitivity to night-time noise.

Table 4-28. Construction and Operation Noise Impacts to Sensitive Receptors Along the Western Alignment, the Four Mile Creek Alternative, and Original Preferred Alignment

	Construction Contours		Operating/Maintenance Contours		
	500 ft.	2000 ft.	70 dBA [1]	65 dBA [2]	55 dBA [3]
Western Alignment					
Residences	1	6	0	0	7
Churches	0	0	0	0	0
Four Mile Creek Alternative					
Residences	6	6	0	0	11
Churches	1	1	0	0	1
Original Preferred Alignment					
Residences	3	7	0	1	9
Churches	0	0	0	0	0

[1] Approximately 83 ft. based on 10 roundtrip trains.
[2] Approximately 263 ft. based on 10 roundtrip trains.
[3] Approximately 2630 ft. based on 10 roundtrip trains.

The STB requires the assessment of noise impacts to sensitive receptors when baseline levels experience a four decibel increase or when the noise level of 65 decibels is exceeded.[21] To meet the STB requirement, the calculation of a noise contour, the maximum distance from the rail line's centerline that would experience a specified decibel reading, is required. Because L_{dn}s account for people's increased sensitivity to noise at night, the L_{dn} value is used in the equation to calculate the contour's distance from the centerline. The sensitive receptors located within a noise contour were determined from U.S. Geological Survey (USGS) quadrangle maps and from a field check.

Contours for 55 dBA and 70 dBA levels were calculated in addition to the 65 dBA contour currently required by the STB.[22] The following distances were calculated: a 55-dBA contour equaled 2630 feet; a 65-dBA contour equaled 263 feet; and a 70-dBA contour equaled 83 feet. Sensitive receptors located within each of these contours then were counted.

---

[21] 49 CFR 1105.7 (6).

[22] To calculate the L_{dn} contours, the following equation was used:

Distance = (100 feet) {(10) exponent [(**Ldn - dBA (55 or 65 or 70)/k**]}

k = 10, a value when there is a clear and unobstructed view of the trains, where the ground is hard, and where there are no intervening structures.

No sensitive receptors affected by noise levels as high as 70-dBA along any of the routes were identified. Noise levels of 65-dBA, however, would be experienced at one residence, along the route of the Original Preferred Alignment but not along the other routes.

The rural residents living within the 55-dBA contour would initially experience possible aggravation from the passing trains although with time, most residents would become accustomed to the noise. The Western Alignment has the fewest sensitive receptors within this dBA contour. The EPA has determined that exposure to a L_{dn} level of 70 dBA over an long period of time (e.g., 40 years) would be required to produce a hearing loss. This level of noise would not affect anyone given that no sensitive receptors are within the L_{dn} contour of 70 dBA for any of the alignments.

The typical noise analysis assumes sound intensity attenuation over unobstructed distances. In fact, much of the Tongue River Railroad will be either elevated in fill areas over drainages or tucked away in cuts through hills and ridges between drainages. Figure 4-4 shows those portions of all three routes where the alignment would be buffered by sound attenuating cuts. These same areas serve as visual shields to block the railroad from the view of those who find railroads a visual intrusion. Thus, for sensitive receptors adjacent to these cuts, the noise impacts would be attenuated significantly.

4.12.3 Noise Impacts to Tongue River Reservoir State Park

The Tongue River State park is located along the western shore of the Tongue River Reservoir. As a part of the dam rehabilitation project, new and improved camp sites are being developed. These camp sites and the county road leading to them are shown in Figure 4-5. The sites and the road are where the vast majority of the visitors will congregate for swimming, boating, picnicking, fishing, and camping. Thus, these are the areas most sensitive to noise and visual intrusion from the Tongue River Railroad.

As shown in Figure 4-5, the Original Proposed Alignment would have been between three quarters and one mile or more from these areas. The Western Alignment is even further removed to the west from these sensitive areas. The increased setback to the west varies from being one-third to one-half mile further away from the campsites and road as compared to the Original Preferred Alignment for most of the distance between Leaf Rock Creek and where the two alignments converge. In addition, as shown in Figure 4-4, for much of this distance the

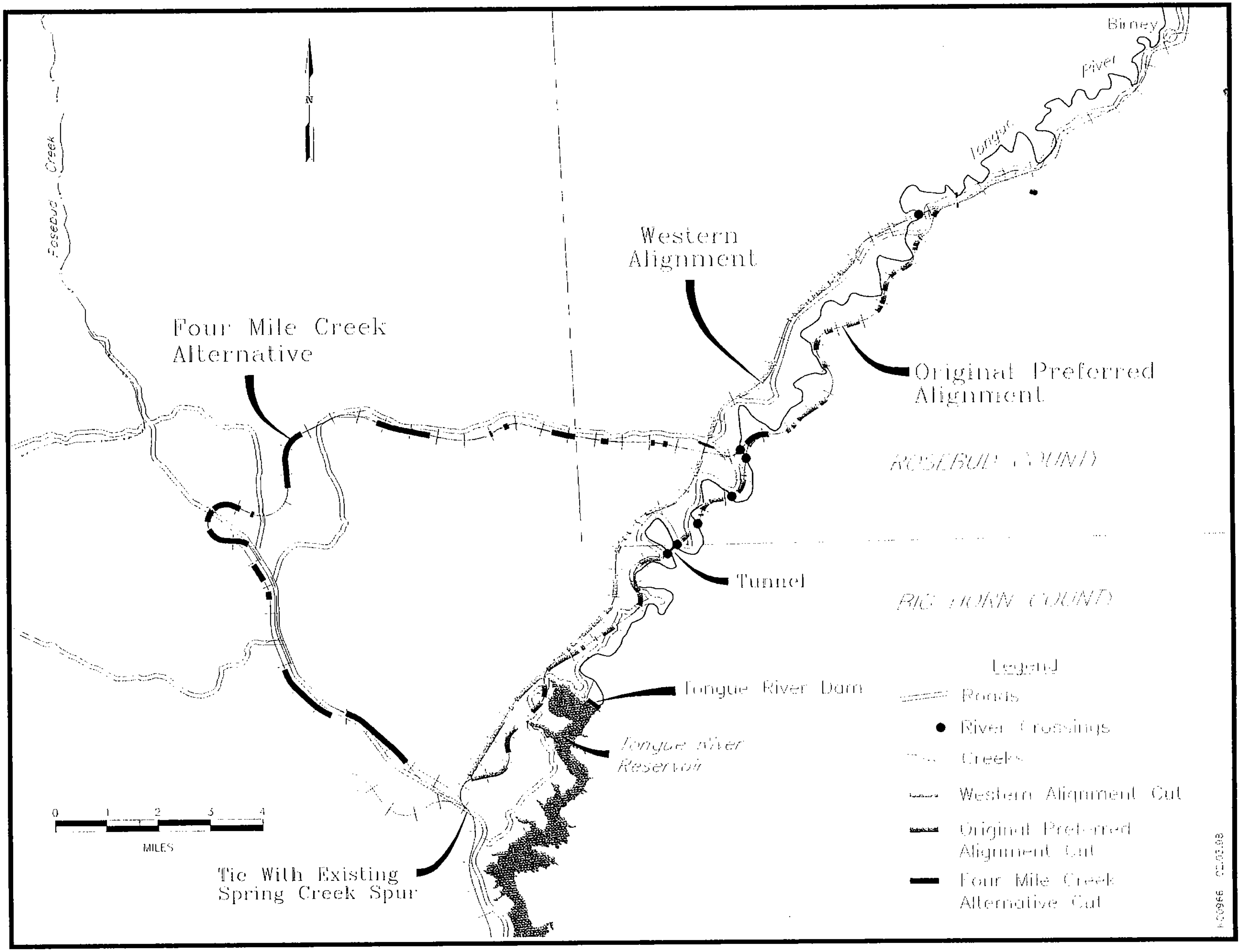


Figure 4-4. Location of Cuts Which Attenuate Noise and Screen Visual Impacts for the Western Alignment and its Alternative Routes

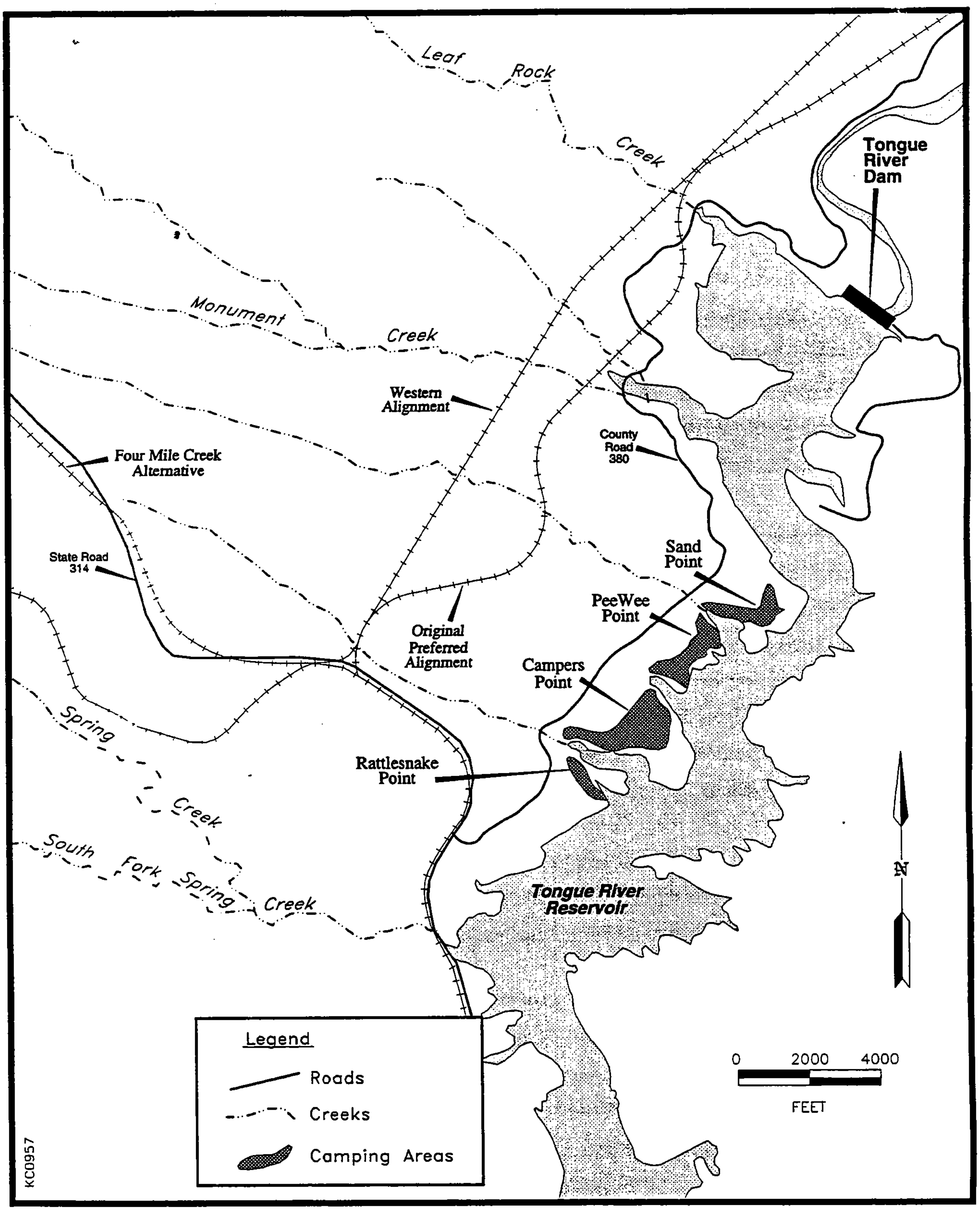


Figure 4-5. Proximity of Tongue River Reservoir State Park & Camping Areas to Various Route Alternatives

alignment will be in a cut where the noises would be further attenuated. However, even without considering the attenuation of the cuts, these camping areas would be well outside the 55 dBA noise contour and thus minimally impacted by noises.

The Four Mile Creek Alignment would be so remote that it would pose no noise impacts to the recreation area.

4.13 Impact to Visual Resources

Some opposition to the Tongue River Railroad raised in earlier proceedings in this Finance Docket was based in part upon the perception that a railroad would spoil the scenic attraction of the upper portion of the Tongue River Valley below the reservoir and would be a visual obstruction and eyesore to visitors at the Tongue River Reservoir State Park.

All three routes would be visible from public roads and two —the Western Alignment and the Original Preferred Alignment—would be visible from parts of the State Park and the access road leading through it. The Western Alignment would be the least visible route from public roads for two reasons: (1) it is the shortest in length and (2) it is set back away from view. As shown in Figure 4-4, much of the Western Alignment would be tucked away in cuts, most deep enough to hide the locomotives and cars from view. However, when motorists driving along the river are able to look directly up some drainages leading down to the river from the west, they may often be able to see high embankments for the fills crossing these nonperennial water courses.

With respect to the State Park, the Western Alignment would be set back away from the State Park an additional one-third to one-half mile beyond the Original Preferred Alignment and would be located in cuts, and would, therefore, be much less visible from the park than would be the Original Preferred Alignment.

Because of its overall length and proximity to State Roads 314 and 566, the Four Mile Creek Alternative is the most visible from public roads. On the other hand, the Four Mile Creek Alternative would not be visible from the recreation areas around the reservoir. Like the Western Alignment, the Four Mile Creek Alternative would involve some high embankments. One in particular is the vantage from the mouth of Four Mile Creek.

The Original Preferred Alignment would be the most visible route to motorists driving along the road paralleling the Tongue River. It would also be visible from some portions of the State Park.

4.14 Impacts to the Northern Cheyenne Indian Reservation and to the Crow Indian Reservation

Neither the Western Alignment nor its alternative routes would directly impact Indian lands. However, because portions of the Tongue River Railroad north of Birney would lie just outside the eastern boundary of the Northern Cheyenne and because of the proximity of the Crow Reservation to the Four Mile Creek Alternative (about eight miles at its nearest point), Indian lands could be indirectly affected by the Proposed Action. Impacts to Native Americans, particularly the Northern Cheyenne and Crow, along the entire TRR Extension from near Ashland to Decker are described, in part, in the report which the Bureau of Land Management prepared in its analysis of impacts to Native Americans from increased coal mining in the Powder River Basin of Montana entitled *Draft Economic, Social, Cultural Supplement, Powder River I Regional EIS*, published in June 1989. In addition, information on impacts appears in the report prepared for the STB on potential cultural effects on the Northern Cheyenne from the TRR Extension (Tallbull and Deaver 1991), as well as reports prepared for the Montana DNRC for the Tongue River Reservoir EIS (Aaberg and Tallbull, 1993; Peterson et al., 1995).

It is important to note that within both the Northern Cheyenne and Crow Indian Tribes there are varying viewpoints about the proposed construction and operation of the entire Tongue River Railroad. For example, some Northern Cheyenne are concerned that the proposed construction and operation and the probable increased regional coal development could negatively and unfairly impact the social and economic structure of the reservation. Others are concerned that the proposal could impair or destroy certain aspects of the traditional life style maintained by and important to many individuals and communities on the reservation. Still other tribal members maintain that, if the railroad and associated regional coal development could assure reduced unemployment and increased economic opportunities on the Reservation, the tribal government would view it as mitigation or compensation for some of the potential negative impacts (STB, 1992).

Some members of the Crow Tribe also view the construction and operation of the entire line favorably, particularly the related regional coal development, since the Tribe has an interest in active mines adjacent to the Reservation as well as coal reserves on the Reservation. However, there are some Crow Tribal members who believe that the impacts from increasing regional development would serve to weaken traditional values and place added stress on the Tribe's ability to maintain traditional religious practices and lifestyles (STB, 1992).

Historically, a number of tribes, such as the Northern Cheyenne, Crow, Arapaho, Oglala and Miniconjou lived and hunted in this region. However, analyses focused primarily on the impacts to the Northern Cheyenne because of the Reservation proximity to the northern portion of the proposed Extension. Although still within the area of impacts, particularly from increasing regional coal development, impacts to the Crow Reservation are considered more generally because of the Reservation's further distance from portions of the entire Tongue River Railroad.

The Northern Cheyenne feel that identified sacred sites should be avoided; they believe that destruction of sites is desecration. The Crow believe that archaeological and cultural sites should be treated with respect and some sites, burials in particular, should never be intentionally disturbed. The Crow are willing to allow excavations at archaeological sites that cannot be avoided, as long as the work is undertaken with respect. The Sioux would prefer to see sites, especially burials and battle sites, protected (Peterson et al., 1995).

In considering Native American concerns, any STB decision approving the proposed construction and operation of the Western Alignment shall be subject to the mitigation set forth in Chapter Six.

4.14.1 Impacts to the Northern Cheyenne Indian Reservation

As stated earlier, the Western Alignment and its alternative routes would not impact Indian lands directly. However, because parts of the Tongue River Railroad north of the Proposed Action run near the Northern Cheyenne Indian Reservation, the construction and operation of the entire line can be considered a "connected action" under NEPA. The following is a summary of the more detailed discussion in the 1992 DEIS for TRRC's proposed Extension, the northern part of which does run near the eastern boundary of the reservation.

Social and Economic

None of the proposed TRRC alternatives, including the Western Alignment, would cross the Northern Cheyenne Indian Reservation. However, construction of the railroad and the eventual development of coal mines in the Ashland/Birney area could have social and economic impacts on the Northern Cheyenne. Most of the potential for impact would occur as a result of coal mining, which is considered an action "related" to the construction of the TRR (STB, 1992).[23]

Social and economic impacts to Northern Cheyenne that are associated with the construction of the Western Alignment and two alternatives would result primarily from 1) in-migration of Northern Cheyenne in search of coal-related employment 2) the settlement of non-Native Americans in Reservation communities if off-Reservation housing facilities prove inadequate 3) increased regional population and commensurate increased Northern Cheyenne contact with non-Native Americans (ICC, 1992).

Impacts to Terrestrial Ecology

Wild plants such as Sweetgrass, Big Medicine and cat tails, which are important for medicine or religious ceremonies, are regularly collected from various locations at the Tongue River Reservoir and north through the valley. Some wild plants make up part of the subsistence base of traditional Indians, in particular at Birney Village. Depending on the final route selection, one or more traditional localities for collecting ceremonially significant plant resources may be disturbed or eliminated. Moreover, right-of-way fencing could block access to traditional gathering locations (ICC, 1992).

Impacts to Cultural Resources and Religious Practices

Besides the probable social and economic impacts from the proposed rail line and resulting increased coal mining, the actual construction and operation of the rail line would change the landscape of the Tongue River Valley, a primarily natural area of limited development, with few people and isolated valleys (ICC, 1992).

Traditional Northern Cheyenne and traditional Crow, Arapaho, Oglala and Miniconjou do not conceive of the world in terms of accepted western division of physical versus spiritual impacts. They recognize both types of effects but consider each to be inseparable from the other. For every spiritual effect, there will be a physical consequence and for every physical impact there will be a spiritual consequence. For example, it is believed that the spirits who live in the hills and trees and springs in Northern Cheyenne country have their own daily round of routine activities that they carry out. Also, it is believed that spirits tend to take the same trails over and over when

[23]It should be noted that the impacts to Native Americans associated with the actual permitting and development of any new coal mines would be addressed in environmental documents prepared by those Federal and/or state agencies with applicable jurisdiction.

visiting and these are known as spirit trails. If by mistake someone blocks a spirit trail by building a house or shed on the trail, then a member of the person's family will become ill or some other misfortune will fall on the family. Consequently, traditional people request that elders inspect proposed building sites to make sure construction in the area will not inadvertently disturb any of the spirits living in the immediate area (ICC, 1992).

The construction of the entire rail line has the potential to impact an unknown number of cultural resources which have spiritual attributes and/or traditional cultural value. The exact number of cultural resources and sites that would be impacted by any of the alignments cannot be known prior to an intensive pedestrian survey of the impact area because the vast majority of cultural resources have never been recorded (ICC, 1992).

Construction and operation of the entire Tongue River Railroad could disrupt and perhaps permanently change the distribution of "black eagles" (certain hawks and vultures) in the area. Since it is believed that these birds are messengers between *Maheo* (the epitome of energy/spirituality in Cheyenne cosmology) and the Northern Cheyenne, this could be a significant spiritual impact (ICC, 1992).

4.14.2 Impacts to Crow Indian Reservation

None of the three route alternatives would cross the Crow Indian Reservation and no Tribal or allotted lands would be acquired for the ROW. Any potential impacts associated with construction of the Tongue River Railroad are primarily related to the development of coal mines in the project area. The mines that currently exist in Big Horn County, where the Crow Indian Reservation is located, are not expected to grow as a result of construction of the Tongue River Railroad. Rather, the existing tonnage from those mines would move north over the Tongue River Railroad, instead of south and then north over the existing BNSF rail line. Consequently, there would be fewer trains using the existing BNSF Line through the Crow Indian Reservation (ICC, 1992).

The Crow traditional way of life could be threatened by increased regional population and commensurate increased contact between Crow Tribal members and people with whom they do not share kinship, Tribal membership, language, history, or culture. This increased inter-racial contact could increase Tribal members' exposure to prejudice, alcohol and drugs, and divergent ideas, values, and behaviors (ICC, 1992).

Increased exposure to prejudice, continued unemployment in the face of regional prosperity, and increased accessibility of drugs and alcohol could result in higher rates of theft, violence, racial conflict, substance abuse, depression, and family violence. These social ills would threaten Crow's ability to practice and teach their traditional culture (ICC, 1992).

4.15 Cultural Resources

4.15.1 Introduction

The purpose of the cultural resource analysis of the Proposed Action is to identify the range of cultural properties in the project area that might be eligible for listing in the National Register of Historic Places. The methodology generally employed in assessing impacts to cultural resources in the 1985 TRRC EIS was used in the analysis of the Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment (ICC, 1992).

The first step was a Class I inventory, or literature search, of all cultural resources previously located in the area of the three alignments. A list of prehistoric, historic or cultural properties was prepared by reviewing the following sources: (1) the National Register of Historic Places; (2) the Montana Sites Compendium; (3) the University of Montana Archaeological Site Files; and (4) the Montana State Historic Preservation Office (SHPO) files in Helena.[24] Previous cultural resource surveys completed in the area were reviewed, as well as pertinent historical cartographic records (General Land Office plats and U.S. Geological Survey maps) and recent aerial photographs. All properties within 100 feet of the proposed ROW and within a corridor extending 1500 feet on either side of the alignment have been tabulated for the TRRC's Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment (Tables 4-29 and 4-30) (ICC, 1992).

The cultural resource survey methodology also included: (1) limited field reconnaissance to confirm the presence and character of properties; and (2) the use of a predictive model to quantify the potential cultural resource properties along all three alignments. Properties located during the field reconnaissance have been given temporary designations, such as TRR 331. Properties observed during reconnaissance were considered historic on the basis of buildings which appeared to be 50 years old or older and had little or no structural modifications or newer,

[24] No paleontological localities have been previously documented along or near any of the alternatives.

intrusive buildings. No historical research was undertaken to confirm the age of buildings in the project area (ICC, 1992).

Table 4-29. Cultural Resources Properties Within 200 Feet of the ROW of Each Route Alternative

Site No.	Type	Eligibility[1]	Western Alignment	Four Mile Creek Alternative	Original Preferred Alignment
24BH507	Lithic Procurement	UN			X
24BH1553	Road	IN			X
TRR334	Cattle Shed	UN			X
TRR336	Habitation	UN	X		
TRR350	Ranch Complex	UN		X	

[1]National Register Eligibility Status: EL = Eligible; IN = Ineligible; UN = Undetermined

4.15.2 Construction

The construction of the Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment could affect cultural resources by removing cultural properties within the average 200-foot wide ROW; by visually or audibly impacting properties beyond the ROW but within its 3,000-foot corridor; or by indirectly impacting properties by altering land patterns or by increasing public accessibility to previously remote areas.[25] Impacts to Native American religious sites may also occur by limiting access. The following assessment of impacts to cultural and religious sites has been made pursuant to the Antiquities Act, the National Historic Preservation Act, the National Environmental Policy Act, the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, and the Montana Antiquities Act (ICC, 1992).

[25] The 3,000 foot corridor was adopted as a standard acceptable to the Montana SHPO while conducting field work for the original Tongue River Railroad EIS.

Table 4-30. Cultural Resources Properties Within a 3,000-Foot Corridor of Each Route ROW

Site No.	Type	Eligibility[1]	Western Alignment	Four Mile Creek Alternative	Original Preferred Alignment
24BH506	Stone Cairn	UN			X
24BH508	Lithic Workshop	UN			X
24BH509	Campsite	UN	X		X
24BH510	Bison Kill Site	UN			X
24BH1037	Lithic Workshop	UN	X		X
24BH1603	Lithic Workshop	UN			X
24BH1604	Lithic Workshop	IN	X	X	X
24BH1617	Ceremonial	UN		X	
24BH1649	Ditch	IN			X
24BH2598	Lithic Workshop	IN	X		X
24BH2600	Lithic Workshop	UN	X		X
24BH2601	Settlement	EL	X		X
24BH2602	Lithic Workshop	UN			X
24BH2608	Lithic Procurement	IN			X
24BH2609	Lithic Procurement	UN			X
24BH2610	Lithic Procurement	IN			X
TRR 332	Ranch Complex	UN	X	X	X
TRR 333	Ranch Complex	UN	X	X	X
TRR 335	Ranch Complex	UN	X		
TRR 337	Ranch Complex	UN		X	X
TRR 339	Habitation	UN		X	X
TRR 341	Farmstead	UN		X	
TRR 343	Farmstead	UN		X	
TRR 346	Ranch Complex	UN			X
TRR 347	Farmstead	UN			X
TRR 348	Cattle Sheds	UN	X		X
TRR 349	Ranch Complex	UN			X
TRR 350	Ranch Complex	UN			X

[1] National Register eligibility Status: EL = Eligible; IN = Ineligible; UN = Undetermined.

4.15.3 Direct Impacts

Prehistoric Properties in the ROW

Based upon a review of Montana SHPO cultural resource property files and cultural resource inventory reports, construction of the Original Preferred Alignment, would affect at least portions of one previously recorded prehistoric property: 24BH507. Property 24BH507, an extensive lithic procurement property, has not been reviewed for eligibility for listing in the National Register of Historic Places. Further work would be required to determine eligibility at this property, which is located only within the ROW of TRRC's Original Preferred Alignment west of the Tongue River Reservoir. The review of the Montana SHPO files does not indicate that construction of the Western Alignment or the Four Mile Creek Alternative, starting at their common point near Birney, would affect portions of any previously recorded prehistoric property.

Applying the model developed for the 1985 TRRC EIS to predict the number of prehistoric properties, seven additional prehistoric properties may be found within the ROW of the Western Alignment. Using the average rate of eligible-to-ineligible properties portion of the same model, 10 percent (or one) of the properties may be eligible for the National Register. The projected number of prehistoric properties for the Four Mile Creek Alternative is 12 and for the Original Preferred Alignment is eight, based upon the length of those alignments. One to two of the projected properties on the Four Mile Creek Alternative and one on the Original Preferred Alignment may be eligible for the National Register.

The prehistoric properties which might be encountered along the ROW should be similar in type to those previously recorded in the area: lithic procurement, lithic workshop, campsite, stone feature, and animal (bison) kill and/or processing.

Historic Properties in the Right-of-Way

Based upon the search of SHPO property files, report review, and visual reconnaissance for properties in the project area, construction of TRRC's Western Alignment, Four Mile Creek Alternative, and Original Preferred Alignment, starting at their common point south of Birney, would affect all or parts of four known historic properties: 24BH1553 (affected by Original Preferred Alignment), TRR 334 (affected by Original Preferred Alignment), TRR 336 (affected by Western Alignment), and TRR 350 (affected by Four Mile Creek Alternative) (see Table 4-29). Property 24BH1553, part of County Road 380 and originally the State Water Conservation Board road, was determined ineligible for listing in the National Register of Historic Places by consensus and would require no further work. Eligibility for National Register listing has not yet been determined for properties TRR 334, a log cattle shed (within the Original Preferred Alignment ROW); TRR 336, a currently occupied, older home (within the Western Alignment ROW); and TRR 350, an historic ranch complex with some newer buildings (within the Four Mile Creek Alternative ROW). Further work would be required to determine eligibility of these three properties.

Using the model developed for the 1985 TRRC EIS to predict the numbers of historic properties, one or two additional historic properties could be found along any of the alignments. One of those properties could be eligible for the National Register. Since the field reconnaissance located properties with standing structures, any additional historical properties are likely to be archaeological in nature. These would probably lack standing structures, but contain foundations, dumps, or features level with or below the ground surface.

Potential Impacts to Sacred Sites

Earlier consultation with the Northern Cheyenne Tribe addressed religious and sacred properties and plant gathering areas located within or near the Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment (Tallbull and Deaver, 1991). It is expected that consultation with the Northern Cheyenne Tribe and other concerned tribes will continue, as required by the Programmatic Agreement (described below and in Chapter Six), through the various phases of inventory, impact mitigation and construction (ICC, 1992).

Prehistoric Properties Within a 3,000-Foot Right-of-Way Corridor

Five prehistoric properties are located within Western Alignment's 3,000-foot corridor, exclusive of the ROW. (As shown in Table 4-30, these are 24BH509, 24BH1037, 24BH1604, 24BH2598, and 24BH2600.) These properties, none of which are exclusive to this alignment, include one campsite and four lithic workshops. Two of the lithic workshops have been determined ineligible for listing in the National Register by consensus, while the other three properties have not had determinations of eligibility completed. The unevaluated properties will require further on-site work prior to determining their eligibility. The ineligible properties will not require any further work.

Vibration and audible and visual impacts to cultural resources located in the corridors beyond the ROW could be the most significant impacts to be anticipated. It is not likely that any of the known prehistoric properties would be adversely affected by vibration from construction activities or by related audible impacts. Visual impacts to properties such as campsites would need to be evaluated on a case-by-case basis.

The Four Mile Creek Alternative corridor contains two of the previously recorded prehistoric properties. (These are 24BH1604 and 24BH617.) Only one (a medicine wheel) is exclusive to this corridor (see Table 4-30). The ceremonial property is unevaluated and will require further on-site work and Native American consultation prior to determination of eligibility. While the lithic workshop (common to the other alignments) was determined ineligible for the National Register by consensus and will not require any further work.

The Original Preferred Alignment contains thirteen prehistoric properties (24BH506, 24BH508, 24BH509, 24BH510, 24BH1037, 24BH1603, 24BH1604, 24BH2598, 24BH2600, 24BH2602, 24BH2608, 24BH2609, and 24BH2610), eight of which are exclusive to this corridor. These properties include a stone cairn, three lithic procurement localities; one campsite; seven lithic workshops; and one animal kill location. Four properties (two lithic workshops and two lithic procurement localities) were determined ineligible for listing in the National Register by consensus, while nine have not had determinations of eligibility completed. The unevaluated properties will require further on-site work prior to determining their eligibility. The ineligible properties will not require any further work.

Historic Properties Within a 3,000-Foot Right-of-Way Corridor

Intact historic properties, mainly those with standing structures, are most likely to be impacted by vibration and visual and audible impacts caused by construction activities. The five potentially historic and known historic properties documented within TRRC's Western Alignment 3,000-foot corridor include: three ranch complexes (TRR 332, TRR 333, and TRR 335); one settlement (24BH601); and one cattle shed location (TRR 348) (see Table 4-30). No determinations of eligibility have been completed for historic properties in the Western Alignment corridor. While the one settlement, occupied during construction of the Tongue River Dam, is eligible for listing in the National Register on the basis of concurrence, additional work may be required. The remaining four potentially historic properties have not been given eligibility recommendations due to a lack of historical research and complete recording. The unevaluated properties, three of which are located in common corridors with other alignments, will all require research and detailed on-site work prior to determinations of eligibility. One of the properties is exclusive to TRRC's Western Alignment corridor.

The Four Mile Creek Alternative 3,000-foot corridor contains six historic properties (TRR 332, TRR 333, TRR 337, TRR 339, TRR 341, and TRR 343) (see Table 4-30). None of the potentially historic properties have been given eligibility recommendations due to a lack of historical research and complete recording. All unevaluated properties will require research and detailed on-site work prior to determinations of eligibility. Two of the properties are exclusive to the Four Mile Creek Alternative corridor.

The Original Preferred Alignment 3,000-foot corridor contains 11 historic properties (see Table 4-30). Determinations of eligibility have been completed for only two of the historic properties in the Original Preferred Alignment corridor. One of the properties, 24BH2601 (a settlement), has been recommended as eligible and the other previously recorded property, 24BH1649 (a ditch), has been recommended ineligible for listing in the National Register. The remaining nine potentially historic properties have not been given eligibility recommendations due to a lack of historical research and complete recording. The unevaluated properties, five of which are also located in other corridors, will all require research and detailed on-site work prior to formal determinations of eligibility. Four of the properties are exclusive to TRRC's Original Preferred Alignment corridor.

Native American Properties Within a 3,000-Foot Right-of-Way Corridor

One property (24BH1617), located in the Four Mile Creek Alignment 3,000-foot corridor, has been identified as a medicine wheel, which could be a sacred Native American property. The property has not been subjected to determination of eligibility for the National Register. It is possible that this property could be impacted by visual or audible impacts caused by construction activities. Impacts to this property would need to be evaluated and an impact mitigation plan would need to be developed and implemented before construction.

4.15.4 Indirect Impacts

The construction of TRRC's Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment would require changes in current land use patterns, which could result in access to previously remote areas. In such cases, individuals consciously or unconsciously could impact cultural resource or sacred properties by vehicle use and by the casual collection of artifacts. National Register eligible prehistoric, historic, or sacred properties, located within or near the 3,000-foot corridor, may be subjected to this type of indirect impact (ICC, 1992).

4.15.5 Operation and Maintenance

Vibration from passing trains could impact cultural resource properties as a result of the operation and maintenance of TRRC's Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment. Visual and audible impacts, unless buffered by topography or vegetation, can disrupt the historic association of a property, and, therefore, can affect its National Register eligibility. Prehistoric pictographs, prehistoric petroglyphs, historic properties with standing structures, and religious or sacred properties, where unobstructed view and quiet are required, are the property types most susceptible to this type of impact. While no pictograph or petroglyph properties are known within 1,500 feet either side of any of the alignments, there is one apparent religious or sacred property.

Based on what is currently known for the project area, historic properties with standing structures would be the most likely properties impacted by the operation and maintenance of the proposed railroad. However, the operation and maintenance impact area should not extend beyond the selected route's 3,000-foot corridor.

Twelve potentially historic properties containing standing structures have so far been identified along TRRC's Western Alignment, the Four Mile Creek Alternative, and the Original Preferred Alignment. The predictive model developed for the 1985 TRRC EIS indicates that approximately 22 percent (roughly three properties) of these could be eligible for the National Register.

4.15.6 Consultation and Mitigative Measures

In December 1986 a Memorandum of Agreement was completed between the Advisory Council on Historic Preservation, the Montana SHPO, and the STB. Following completion of final engineering, the Agreement stipulates how to address archaeological, architectural, historic, and cultural properties which may be affected by the construction of the already-approved line between Miles City and terminal points in Rosebud County, Montana. The Agreement includes implementation of survey, identification and evaluation of prehistoric, historic or Native American sites, structures, or cultural properties; development of a historic properties management plan; development of a Treatment Plan in consultation with the STB, Montana SHPO, and other appropriate agencies; and procedures for reviewing and addressing objections and/or disagreements. The Agreement is still active and will apply to the construction of the Ashland to Miles City portion of the line.

In December of 1996 the STB began circulating for signature a Programmatic Agreement, similar in approach to the earlier Memorandum of Agreement, but pertaining specifically to the TRRC Extension between Ashland and Decker, including the Four Mile Creek Alternative. The wording in the Programmatic Agreement is broad enough to encompass the Western Alignment. Parties to the Programmatic Agreement (PA) include the STB, the Montana SHPO, the Advisory Council on Historic Preservation, and the TRRC. In addition, the PA allows for representatives from the Northern Cheyenne Tribe and the BLM to participate in the cultural resources process and to be concurring signatories. It is TRRC's understanding that since not all signatures have been affixed to the Programmatic Agreement, the STB will continue circulating the document for the remaining signatures upon receipt of the Western Alignment permit application from the TRRC. The complete PA is contained in Appendix G of this ER.

Chapter Five

CHAPTER FIVE

Unavoidable Adverse Environmental Impacts of the Proposed Action and its Alternatives

This chapter takes note of unavoidable adverse impacts associated with the Proposed Action following implementation of the mitigation measures recommended in Chapter Six.

5.1 Land Use

The construction of the TRRC's Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment will require the acquisition of 468, 636, or 447 acres of land, respectively. The construction of any rail line alternative would result in unavoidable impact on current land use which includes agricultural production and recreation.

5.2 Socio-economic

Unavoidable socio-economic impacts that are attributed to the operation of the railroad would be limited. Population increases associated with railroad operation would be slight and would be confined to Miles City, Montana or Sheridan, Wyoming. Both are established communities which are able to absorb increased population. All four Montana counties would receive positive fiscal benefits from the operation of the railroad. Sheridan County, Wyoming would not receive tax benefits from the Proposed Action but would benefit from construction-related purchases and construction jobs.

Unavoidable impacts associated with the Tongue River Railroad would occur to BNSF crews located in Sheridan, Wyoming, and Forsyth, Montana. Individuals working in coal transport for BNSF may experience job relocations or displacements when BN-transported coal would be rerouted over the TRRC Extension. Such actions would translate into unavoidable secondary impacts to Forsyth and Sheridan.

5.3 Transportation

The principal unavoidable impact to transportation systems would occur during the operation of the railroad. The operation of the railroad over the Western Alignment would cause vehicle delays averaging slightly over one minute and four minutes at the various train crossings of two county roads, S566 and S314, respectively. The proposed Western Alignment would require reconstruction of roads but the impacts of the relocation would be temporary.

Vehicular traffic volumes on the project area's roads and highways would increase during the construction period, although temporary construction roads along the ROW will be used for most of the construction.

5.4 Safety

Unavoidable impacts to safety primarily would occur during the operation of the railroad. Vehicle/train accidents could occur at railroad crossings of S566 and S314, although the probability is minimal. Railroad crossings would pose a slight additional safety hazard since passing trains could delay the response of emergency vehicles to either medical or fire emergencies.

Based on nationwide data that tends to overstate the derailment risk, there is the possibility that one train derailment may occur in a five-year period on the proposed Western Alignment. One derailment in a three-year period may occur on the Four Mile Creek Alternative.

5.5 Energy

The construction of the Western Alignment or its alternative routes would require consumption of fuel to operate equipment and to transport personnel. However, the long-term operational energy consumption will be reduced significantly by reducing the distance for shipping coal to midwestern utility markets. The greatest reduction would occur through use of the Western Alignment.

5.6 Soils

During construction of the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment, wind and water erosion would result in temporary losses of soils. The areas of cuts and fills represent the sites most susceptible to erosion. Other sites include staging camps, construction sites, topsoil stockpiles, and access corridors. Soil losses would be reduced by erosion control at these susceptible sites, including reclamation of the ROW and stabilization of the cut-and-fill slopes.

Reclaimed areas contain soils with physical properties different from conditions prior to disturbance. Handling soil would result in such unavoidable (but relatively insignificant) impacts as the loss of natural soil profile, altered soil structure, and a loss of organic matter. If a soil's water holding capacity and aeration decrease because of changes in its physical properties, soil-plant relations would be adversely affected.

In addition, soil slumping might occur within a small part of any route. Proper design of bridges, culverts, etc. along with reseeding and planting vegetation in disturbed areas should prevent long term impacts from soil erosion and soil slumping during operation of the railroad.

5.7 Hydrology and Water Quality

During construction of all three alternatives, the Tongue River and streams will likely experience an unavoidable, temporary increase in suspended sediment and turbidity during bridge construction, and following runoff events from areas of soil disturbance, especially from the excavation of cuts and emplacement of fills. Such impacts will be largely temporary and should not result in long-term changes to water quality. The mitigative measures (Best Management Practices) set forth in Chapter Six to be taken during construction and permanent design features would substantially reduce these impacts.

For the Western Alignment, TRRC plans to work closely with the U.S. Army Corps of Engineers to identify the impacted water ways and wetlands during final design and ground staking of the alignment. TRRC will submit 404 permits that address these disturbed areas. The Western Alignment avoids two jurisdictional wetlands which would be impacted by the Four Mile Creek Alternative and the Original Preferred Alignment. The Western Alignment also avoids one additional jurisdictional wetland affected by the Four Mile Creek Alternative (TRRC, 1997).

The necessary wetlands mitigation measures would be implemented for all three alignments. Wetlands would be reconstructed in the same general vicinity of the impacted wetlands to preserve the "no net loss" policy.

5.8 Aquatic Ecology

The temporary increases in TSS downstream from bridge construction and/or fill areas adjacent to the river could result in out-migration of invertebrate and fish populations in the immediate areas of construction. This unavoidable impact should be temporary. When construction is complete, recolonization of macroinvertebrates and in-migration of fish species would be expected as erosion controls become effective.

Aquatic resources also would experience unavoidable impacts in the unlikely event that accidental spills introduce toxic materials into the Tongue River. Since such accidental spills would most likely involve petroleum products, the susceptibility of aquatic organisms and the federally protected bald eagle to diesel fuel and common solvents would be the major concern.

However, unit trains carrying coal pose a much smaller threat from spills than do typical mixed freight trains with liquid cargoes.

5.9 Terrestrial Ecology

The construction of the Western Alignment would directly impact approximately 364 acres including the associations of pine/juniper, grassland/sagebrush, agricultural, prairie, deciduous tree/shrub, and breaks. The construction of the TRRC Original Preferred Alignment would directly impact about 334 acres of vegetation, including the above listed associations. The construction of the Four Mile Creek Alternative would directly impact about 456 acres of vegetation, including the above listed associations. Since the Western Alignment disturbs fewer acres than the Four Mile Creek Alternative, it should have fewer adverse impacts on vegetation than the Four Mile Creek Alternative.

The loss of vegetation also would represent the loss of wildlife habitat, which in turn could mean the displacement of wildlife. The disturbance of limited acres of deciduous/tree shrub and pine/juniper habitats could temporarily displace deer and pronghorn. Upland birds also could be displaced in the short term if rail line construction removes the habitat for sage grouse, pheasant, gray partridge, sharp-tailed grouse, and sharp-tailed grouse leks. Raptor bird species located in the construction corridor could experience temporary displacement because of the loss of nesting sites and the loss of habitat for raptor prey species.

Additional unavoidable impacts to wildlife attributed to rail line construction include the following: increased "road-kills" due to traffic increases on project area roads; increased recreation pressure by the construction workforce; and increased hunting and poaching pressure on deer and pronghorn populations.

Railroad operations would continue to cause some displacement of deer and pronghorn from habitat adjacent to the railroad or accessible to recreationists. Mule deer and white-tailed deer would probably adapt to railroad traffic and continue to use adjacent habitats. This adaptation, however, could result in the unavoidable impact of train-deer collisions. In contrast, pronghorn could be excluded from the ROW by some fencing configurations designed to protect domestic livestock. Pronghorn movements in the area south of the confluence of Four Mile Creek with the Tongue River particularly could be disrupted by ROW fencing.

5.10. Biodiversity

Biodiversity is the variety and variability among living organisms and the ecological complexes in which they occur (OTA 1987). The diversity of living organisms and the communities they define are important ecologically, economically, and aesthetically. From an ecological perspective, biological diversity provides many important functions, such as, waste recycling, pollution filtration, flood control and geochemical recycling. Economically, many industries depend on biological resources (e.g., petrochemicals, timber and paper industry, pharmaceuticals). From a societal perspective, the diversity of life and its maintenance is important for providing aesthetic and recreational values.

The U.S. Department of Interior and U.S. Department of Agriculture recently published "America's Biodiversity Strategy: Actions to Conserve Species and Habitats (USDI & USDA 1992). This document recognized biological diversity as a national and international asset for present and future generations. These agencies stated that public and private sectors have a role in maintaining and restoring, where practicable, biodiversity for its intrinsic worth, for stable ecosystems, and for human health and well-being. This document states that such a national goal should be achieved in consonance with other social and economic goals. With these foundations, many federal and state agencies are addressing potential biodiversity effects from development activities through the NEPA process (Beacham et al. 1993).

Biodiversity may be viewed at several different levels: organism diversity, ecological community diversity, ecosystem diversity, genetic diversity. Adverse impacts to biological diversity at any level may affect the long term stability of an ecological system. The NEPA environmental impact analysis process requires assessment of ambient aquatic and terrestrial ecology and any impacts that may occur as a result of a project. These functions have been performed in Sections 2.0 and 4.0. In the present section, the overall potential for adverse impacts to the biodiversity of the Tongue River ecosystem and its functions are estimated.

Unavoidable adverse impacts from the construction and operation of the proposed project are summarized in Sections 5.7 and 5.8. The use of proposed mitigation measures (Chapter Six) for run-off and sedimentation control, construction specifications in or near wetlands, weed control, wildlife movements, vegetation reclamation and restoration, and protected species impact avoidance should minimize any potential for adverse impacts to biodiversity under all three proposed routes.

Adverse impacts on Tongue River biodiversity would occur in the unlikely event of a relatively large fuel or chemical spill from construction activities or railway operations. A large fuel or chemical spill could cause acute and chronic exposures to toxic substances for a large spectrum of aquatic and wetland biota. A chemical spill potentially could cause long term or permanent loss of biological diversity within the Tongue River aquatic ecosystem, including those terrestrial species dependent on Tongue River resources, such as, waterfowl, wading birds and the bald eagle. Such potential impacts would be greatest for the Original Preferred Alignment, but less for the Western Alignment and the Four Mile Creek Alternative because of their relative distances from the river valley. However, proposed mitigation measures for fuel and chemical spill prevention are likely to minimize adverse impacts should such an unlikely event occur. Additionally, unit trains carrying coal pose a much smaller threat from spills than do typical mixed freight trains with liquid cargoes.

5.11 Air Quality

Four sources of air emissions would result from the construction and operation of the Western Alignment, Four Mile Creek Alternative, or Original Preferred Alignment. These include: fugitive dust from construction activities, combustion emissions from construction equipment, combustion emissions from locomotive engines, and wind blown dust from the constructed ROW. Particulate and combustion emissions would diminish after construction activities are complete.

Long term air quality impacts include emissions contributed to the ambient environment as a result of train operations. These emissions include products of combustion from diesel powered locomotives and wind blown dust resulting from any exposed soils along the ROW. Air quality impacts to the project area resulting from these operating emissions are not considered to be significant according to applicable state and federal regulations. In any event, emissions from the Western Alignment would be substantially lower than emissions from the Four Mile Creek Alternative.

5.12 Noise

Construction of the Western Alignment, the Four Mile Creek Alternative, or the Original Preferred Alignment would increase the ambient noise levels in areas adjacent to construction activity. Any increases in noise levels, however, would be temporary and last only as long as the construction activity.

Trains operating on the rail line would increase ambient noise levels during the entire period of operations. Some rural residences located within the 55-decibel (dBA) contour line would experience levels of noise identified as intrusive.

However, the noise impacts will be less severe for the Western Alignment than the Four Mile Creek Alternative because fewer residences are close to the Western Alignment.

5.13 Aesthetics

All three routes would alter the visual characteristics of the landscape. However, the Western Alignment would be the least visible of the three alternatives. For the Western Alignment, which would be located outside of the Tongue River Valley floor, the most visible effect would be the large fill areas that would be observed primarily from the county road at several locations looking to the west directly up the drainages and side canyons. Otherwise the Western Alignment is hidden behind the first set of hills or in cuts where it would not be visible. The Western Alignment would probably not be visible from the camping areas at the Tongue River Reservoir State Park for these reasons.

The Four Mile Creek Alignment has the greatest exposure to view from public roads but is the least visible along the Tongue River Valley. The Original Preferred Alignment would be the most visible along the Tongue River and at the state park.

5.14 Native Americans

There are varying viewpoints among the Northern Cheyenne and Crow regarding the effects and impacts from the proposed rail line and associated increased mining activity and development. The differing viewpoints generally pertain to the potential negative impacts from these activities to the traditional way of life practiced by a number of residents on the reservations (ICC, 1992). None of the three alternatives considered in this environmental report cross the Northern Cheyenne or the Crow Reservations so none of them should directly impact these reservations. Moreover, since the Western Alignment is farther away from the reservations than the Four Mile Creek Alternative, it should have even fewer indirect impacts.

While construction and operation of the Western Alignment or the other alternatives would <u>not</u> directly affect either Tribe, construction and operation of the <u>overall</u> TRRC line and associated increased development could cause some indirect impacts to both reservations, particularly to the Northern Cheyenne Indian Reservation. Adverse impacts could occur to the infrastructure, social organization, and social well-being of both reservations. There could also be a loss of cultural and ethnic identity and a decreasing emphasis on traditional values. Both reservations could become more culturally diverse (ICC, 1992).

Increasing regional population growth and the possible increase of non-Native American residents on the Northern Cheyenne Indian Reservation could lessen the feeling that the reservation is a homeland for Northern Cheyenne (ICC, 1992).

Spiritual as well as cultural impacts could occur. For the Northern Cheyenne, who hold the fundamental belief in the inseparable relationship between the physical and spiritual, the impacts from changes in the surrounding landscape associated with rail operations, coal mining, and increased development would represent an irreversible spiritual loss. Increasing development could also lead to loss of privacy and seclusion necessary for religious practices. And the Northern Cheyenne, who enjoy the rural lifestyle and/or isolation on the reservation could find their lives changed by the rail construction and operations, and by increasing development and population, particularly in the Ashland and Birney Village areas.

Similarly, for the Crow who hold traditional beliefs, the increasing coal mining in the region could irreversibly and adversely impact sites with sacred attributes or ethnic significance. Further for traditional Crow members, a reduction of land and the change of the natural environmental surroundings from mining could represent a loss in a major source of inspiration and a loss of privacy for religious activities (ICC, 1992).

5.15 Cultural Resources

All three alternatives are expected to have some unavoidable impacts on cultural resources although the Western Alignment has the fewest adverse impacts. Specifically, the construction of either the TRRC's Western Alignment or the Four Mile Creek Alternative line segments, starting at their common point south of Birney, will not directly impact any previously recorded prehistoric cultural resource properties. Construction of the Original Preferred Alignment would impact one recorded prehistoric property, which has not been reviewed for eligibility for listing in the National Register Historic Places. In addition, the construction of the Western Alignment would affect one probable historic property which would require recordation and determination of eligibility for listing in the National Register. Construction of the Four Mile Creek Alternative would affect one other probable historic property, which also would require recordation and determination of eligibility for listing in the National Register. Construction of the Original

Preferred Alignment also would affect two probable historic properties. Impacts to any sites determined eligible for the National Register would be mitigated through appropriate data recovery procedures.

Based upon known cultural resources in the area and the types of land forms to be affected, as well as the results of reconniassance in the air, the Western Alignment is expected to affect fewer prehistoric and historic properties and correspondingly fewer National Register eligible historic properties than either the Four Mile Creek Alternative or the Original Preferred Alignment.

The land use changes associated with the entire TRRC railroad and related coal mine development could result in access to previously inaccessible areas. Individuals might indirectly impact cultural resources or sacred properties by vehicle use and by artifact collection (ICC, 1992). Such land use changes are expected to be the same if the Western Alignment is built in lieu of the Four Mile Creek Alternative.

Chapter Six

CHAPTER SIX

Recommended Mitigation Measures

This chapter presents the mitigation measures that TRRC recommends be adopted for the Western Alignment. TRRC bases its recommendations on the mitigation measures adopted by the STB in its October 28, 1996, decision approving the Tongue River Railroad Extension (STB, 1996b). TRRC proposes that some of these STB mitigation measures be modified to reflect the specific characteristics of the Western Alignment route.

For the convenience of reviewers, this chapter includes verbatim text of the mitigation conditions imposed in the October 28, 1996, STB decision (Appendix B, entitled "Environmental Mitigation Conditions"), including the conditions from the Mitigation Plan in the 1992 DEIS (Appendix E of ICC, 1992) that are incorporated by reference[1].

The recommended changes to the 1996 STB mitigation measures for the TRRC rail extension appear below as either deletions or additions to this text. Deletions appear as text with a single line drawn through it; additions appear as underlined text. Finally, where appropriate, the reason for recommending the change in the mitigation measure appears in square brackets preceded by the word "Note:". In this way, SEA staff and other reviewers will be able to see at a glance the differences between the 1996 mitigation measures applied to the TRRC rail extension and those that are recommended in this ER.

*   *   *   *   *   *   *   *   *   *   *   *   *

6.1 Land Use Mitigation Measures

(1) TRRC shall negotiate compensation for direct and indirect loss of agricultural land on an individual basis with each landowner. TRRC shall assist landowners in identifying and developing alternative agricultural uses for severed land, where appropriate. TRRC shall apply a combination of alternative land use assistance and compensation as necessary and as agreed upon during right-of-way negotiations.

[1] Such incorporation by reference occurs three times and has been pulled together into this chapter for the convenience of reviewers. (Formatting, footnote numbering, and page numbering have been updated.)

(2) Where capital improvements are displaced, TRRC shall relocate or replace these improvements or provide appropriate compensation.

(3) TRRC shall construct right-of-way fencing along the entire line according to specifications suitable to the landowners and consistent with industry standards. TRRC shall negotiate special fencing needs with individual landowners.

(4) TRRC shall install cattle passes (oval, corrugated metal structures, approximately 11 ft. high and 12 ft. wide at the base) along the right-of-way to ensure passage of cattle under the rail line. TRRC shall work with landowners to identify appropriate locations for cattle passes and private grade crossings for equipment.

(5) During final engineering, TRRC shall work with individual landowners to avoid unnecessary conflict between construction activities and ranching operations.

(6) TRRC shall confine all construction activities to right-of-way and to the construction ~~centers~~camps along the rail line, at locations to be negotiated between individual landowners and TRRC.

(7) TRRC shall require its contractors to assure that its construction camps are orderly. Upon completion of construction, TRRC shall return the camps to their previously existing use.

(8) TRRC shall appoint a representative, with direct access to management, to work with primary contractors, subcontractors, and landowners to resolve problems that develop during construction.

6.2 Social and Economic Mitigation Measures

(1) TRRC shall make available to local governments and to the Northern Cheyenne Tribe all public data and studies that it is aware of concerning the facilities and services that may be required as a result of mine development.

(2) TRRC shall appoint a liaison between TRRC management and the Northern Cheyenne Tribe to ensure that tribal members receive an equal opportunity to secure temporary construction and full-time operational jobs with the railroad.

6.3 Transportation Mitigation Measures

(1) During construction, TRRC shall encourage contractors to provide laborers with daily transportation to the work site from a central location so as to minimize traffic congestion.

(2) To the extent possible, TRRC shall confine all construction related traffic to a temporary access road within the right-of-way. Where traffic cannot be confined to this access road, TRRC shall ensure that contractors make necessary arrangements with landowners or affected agencies to gain access from private or

public roadways. The access road shall be used only during construction of the railroad grade, after which construction shall be confined to the right-of-way.

(3) Where traffic along a public roadway may be disrupted during construction, TRRC shall comply with all requirements of the Montana Department of ~~Highways~~Transportation ~~(MDH)~~(MDT) or other appropriate agencies. In the absence of such requirements, TRRC shall endeavor to maintain at least one lane of traffic open at all times. Specific plans shall be developed by TRRC, in coordination with state and local agencies, to assure the quick passage of emergency vehicles. TRRC shall submit all construction plans affecting public roadways to ~~MDH~~MDT for review and approval.

(4) TRRC shall comply with ~~MDH's~~MDT's *Manual of Uniform Traffic Control Devices* for work zone safety.

(5) TRRC shall equip all grade crossings with warning signs and devices, as deemed appropriate ~~under MDH's Railroad Crossing Protection Policy~~ after the safety needs of each crossing are evaluated by the MDT Diagnostics Review Team as provided for in the Railroad Administrative Rules of Montana (18.6i301-315 Montana Code Annotated).

6.4 Air Quality Mitigation Measures

(1) TRRC shall subject all heavy equipment and vehicles used in the construction, operation, and maintenance of the railroad to regular inspection and maintenance to ensure that operation complies with manufacturer's specifications and that equipment is running as cleanly and efficiently as possible.

(2) When vegetation is removed from the right-of-way, TRRC shall clear areas only as necessary to mitigate impacts of wind erosion and fugitive dust.

(3) Where devegetation has taken place, TRRC shall begin revegetation as early as possible. Where immediate revegetation is not possible, TRRC shall implement alternative stabilization measures such as matting and mulching.

(4) TRRC shall suppress dust at all work areas by using water trucks, and shall make water available to local landowners, governmental agencies, or associations for these activities. TRRC shall conduct dust suppression activities regularly and frequently during the dry periods.

(5) TRRC shall discourage open burning except where alternatives are not practicable. In these cases it will conduct any open burning in strict accordance with local or other applicable regulations, and shall obtain all necessary permits and observe all necessary safety precautions.

6.5 Noise Mitigation Measures

(1) To the extent practicable, TRRC shall schedule major noise producing construction activities during the weekday and daylight hours.

6.6 Safety Mitigation Measures

(1) ~~Because of the descending 2.3 percent grade, TRRC shall strictly adhere to safe railroad operating practices, such as the use of seven locomotives~~maintaining train speed ~~at no more than 10 miles per hour for the descent, if appropriate. Because of variations in locomotive technology, the number of locomotives may vary from trip to trip.~~ [Note: This item does not apply to Western Alignment which does not have such steep grades; it would apply only to the Four Mile Creek Alternative.]

(2) TRRC shall adhere to federal and state construction safety regulations to minimize the potential for accidents. TRRC shall require its contractors to conduct safety meetings for their workers and to ensure that each person understands safety measures and procedures.

(3) TRRC shall develop an internal Emergency Response Plan consistent with Montana State plans authorized under Title 10, *Montana Code Annotated.*[2]

(4) TRRC shall establish cooperative relationships with all federal, state, and local agencies with responsibility for disaster/emergency response. TRRC shall provide operational plans and copies of the emergency response plan identified above to such agencies and incorporate their comments as appropriate.[3]

(5) TRRC shall develop a Wildfire Suppression and Control Plan for fires occurring on the right-of-way as a result of rail construction/operations or undetermined causes. TRRC shall include the following measures relating to fire suppression which are set forth in the mitigation plan in the 1992 DEIS.

[Note: The fire suppression measures set forth in the DEIS are included here (items a - d) for the convenience of the reader.]

a. The plan would be developed by TRRC after final engineering and overall operation plans are complete. This will afford planners the benefit of special information regarding exact location of centerline, access points,

---

[2]This includes a roster of agencies and specific persons to be contacted for specific emergencies, procedures to be followed by particular rail employees, emergency routes for vehicles, and location of emergency equipment.

[3]These agencies include: Disaster and Emergency Services Division of the Department of Military Affairs, Helena; rural fire departments along the route; local ambulance and emergency medical services and air evacuation services in Billings and Sheridan; the Montana Department of Health and Environmental Sciences (especially the Water Quality Board); Montana Department of Fish, Wildlife and Parks (MT FWP); Montana Department of Natural Resources and Conservation (MT DNRC); the Northern Cheyenne Tribe; the Bureau of Land Management (BLM) or U.S. Forest Service; and other local agencies or groups which are identified as key to disaster response.

and equipment and personnel that might be of use in case such an event occurs.

b. State-of-the-art techniques for fire prevention and suppression would be evaluated and included in the plan as applicable. TRRC would adhere to existing industry-wide standards.

c. During final engineering, TRRC would provide the greatest possible access to all portions of the ROW, by providing grade crossings and gates, in an effort to minimize response time.

d. TRRC would observe all applicable operational regulations promulgated by the Federal Railroad Administration. This will also serve to minimize the potential for railroad caused fires.

(6) TRRC will negotiate the placement of fire suppression equipment with local ranchers.

(7) TRRC will maintain a serviceable access road and/or access points along the right-of-way, at locations determined in consultation with the local fire officials.

(8) TRRC will develop and install a mobile communications system between the local volunteer fire fighting units, train crews, and ranchers with property adjacent to the right-of-way.

(9) TRRC shall develop, in cooperation with appropriate federal, state and local agencies, a plan to prevent spills of oil or other petroleum products, both during construction and operation and maintenance. TRRC's plan shall include the following measures pertaining to oil spills which are set forth in the mitigation plan in the 1992 DEIS.

[Note: The measures pertaining to oil spills set forth in the DEIS are included here (introductory paragraph and items a - f) for the convenience of the reader.]

The plans developed by TRRC would include those stipulations that would be imposed on those companies and contractors involved in construction of ~~any of~~ the Western Alignment~~three alignments~~. The plan would include emergency notification procedures, including a priority list of those agencies and individuals to be notified in a specific emergency. The plan would include specific names and phone numbers of designated contacts (government and private) that are to be notified in case of such events as an herbicide spill, fuel spill, range fire, and medical emergency. Also, the following items would be included:

a. Procedures for reporting spills.
b. Definition of what constitutes a spill.

c. Methods of containing, recovering, and cleaning up spilled oil.
d. A list of needed equipment and their locations.
e. A list of all governmental agencies and management personnel to be contacted, including, but not limited to:
   - Disaster and Emergency Services Division of the Department of Military Affairs, Helena. This is likely the most important contact in case of an emergency in terms of developing a coordinated response.
   - Rural fire departments along the route.
   - Local ambulance and emergency medical services as well as air evacuation services in Billings and Sheridan.
   - The Montana Department of Health and Environmental Sciences (especially the Water Quality Board).
   - The Montana Department of Fish, Wildlife, and Parks.
   - The Montana Department of State Lands, and Administration Bureau.
   - The Montana Department of Natural Resources and Conservation, Water Resources Bureau.
   - Northern Cheyenne Tribe.
   - U.S. Bureau of Land Management or U.S. Forest Service (recent reorganization proposals may transfer local segments of the Custer National Forest to the BLM for management).
   - Other local agencies or groups which are identified as key to disaster.
f. Assurances that techniques and procedures to be employed in cleanup are representative of the best practicable technology currently available.

(10) TRRC shall develop guidelines based on the tasks to be accomplished by individual contractors, including: (a) steps during refueling to guard against overflows, (b) storage of fuel only in metal storage tanks surrounded by impervious dikes capable of containing greater than the capacity of the tank, (c) removal of waste oil to appropriate sites, and (d) maintaining equipment in good running order and conducting routine maintenance activities.

(11) If an herbicide spill occurs, TRRC shall respond using the same general approach discussed above. TRRC shall immediately contain the spill, notify the appropriate agencies, and implement appropriate clean-up procedures.

6.7 Hydrology and Water Quality Mitigation Measures

(1) To assure that overall water quantity and quality are not unnecessarily altered or diminished by this project, TRRC shall submit detailed permit applications to the applicable agencies, including the U.S. Army Corps of Engineers, local conservation Districts, the Water Quality Bureau of the Montana Department of Health and Environmental Services, and any other applicable agencies.

(2) TRRC shall secure applicable permits from MT DNRC for bridge crossings over the stream bed of the Tongue River.

(3) TRRC shall consult with EPA to implement EPA's river bank stabilization methods at bridge crossings and riprap areas to prevent soil erosion and sedimentation loading to streams and the Tongue River (see Appendix E). Some of these methods would include placing logs, root wads, and vegetative plantings with rock rip rap along bridge sites and stream encroachment areas. To prevent unnecessary degradation of water quality due to erosion, revegetation efforts would begin as soon as possible after construction is completed in a given area. [Note: Text was added to describe methods.]

(4) TRRC shall ensure that all culverts and other drainage structures installed at ~~ephemeral~~ non-perennial and perennial stream crossings will be designed to pass the projected 25-year flood.

(5) Where possible, the route shall be designed to avoid the flood plain. Where the railroad grade does infringe upon the flood plain, TRRC shall install drainage structures to assure that the grade does not restrict or reroute the 25-year flood.

(6) Construction of all stream crossings, including bridges and culverts and activities requiring stream bank encroachments (rip-rap, for example), shall occur during periods of low or no flow in the streams affected.

(7) A Stormwater Pollution Prevention Plan and an Erosion Control Plan will be prepared in accordance with NPDES Stormwater Permit requirements and Montana Department of Transportation guidelines. Best Management Practices (BMPs) which are currently planned for control of erosion during construction include [Note: Item (7) was added to better describe measures available for mitigating soil erosion and sedimentation]:

- Spreading stockpiled topsoil, seeding, fertilizing, and mulching of approximately 20 percent of the slopes in cut and fill areas. The remainder of the slopes are expected to contain a large amount of rock and clinker material which will not support vegetation and which should provide a degree of armoring to the slope surface to reduce erodibility.

- Silt fences.
- Slope drains.
- Run-on diversion control.
- Waterway protection at the Tongue River and other perennial stream crossings (includes various BMPs).
- Pipe inlet/outlet protection.
- Ditch sediment traps.
- Runoff interception ditches.
- Benching systems to route runoff transversely across the face of higher cuts and fills. Drainage routed to rock riprap-lined flumes.
- Sediment traps.
- Rock check dams.

For the permanent design (operation phase), many of the above BMPs will remain.

6.8 Aquatic and Terrestrial Ecology Mitigation Measures[4]

(1) TRRC shall consult and coordinate with each state and/or federal agency having responsibility for the particular subject area addressed at each of the ~~participate as a member of the Multi-agency/Railroad Task Force (Task Force), which will advise and coordinate with TRRC in accomplishing the~~ following mitigation measures which are set forth in the Mitigation Plan in the 1992 DEIS addressing aquatic and terrestrial ecology.[5] [TRRC believes the Multi-agency/Railroad Task Force would no longer serve a useful purpose with regards to the Western Alignment. It was originally formed to deal with the unique aspects arising from construction of the tunnel on the Original Preferred Alignment. TRRC believes it would be more efficient to consult directly with the state/federal agencies responsible for the subject area.]

[Note: The mitigation measures set forth in the DEIS addressing aquatic and terrestrial ecology are included here (A.0 through A.3) for the convenience of the reader.]

A.0 Aquatic and Terrestrial Ecology Impact Mitigation

A.1 General

The following mitigation measures are intended to reduce or eliminate potential adverse environmental impacts to the terrestrial and aquatic ecology from the construction and operation of the proposed Western Alignment~~rail line Extension~~.

---

[4] See Section A.9 of the DEIS Mitigation Plan. This mitigation shall be implemented to the extent applicable to the ~~Four Mile Creek Alternative~~Western Alignment.

[5] For reclamation on cut and fill slopes TRRC shall construct serrations perpendicular to the slope. [Note: This change has been made in this Chapter, where appropriate.]

As part of the mitigation plan, TRRC would consult and coordinate with each state and/or federal agency having responsibility for a particular subject area.~~participate as a member of an informal Multi-agency/Railroad Task Force. The purpose of the Task Force will be to advise, assist and coordinate with TRRC in accomplishing the mitigation measures set forth below addressing terrestrial and aquatic impacts. Task Force members shall participate in the Task Force at their own discretion and expense and to the extent that their resources permit. Further, the Task Force members may use additional resources available to them to accomplish the mitigation projects. Other interested parties may be invited to participate as appropriate. Through this informal multi-agency approach, with the participation and cooperation of TRRC, aquatic and terrestrial mitigation can be more effectively implemented.~~

For example, TRRC will consult and coordinate with~~Those agencies invited to participate on the Task Force are~~ the following agencies:

- Surface Transportation Board~~Interstate Commerce Commission~~;
- Montana Department of Fish, Wildlife, and Parks;
- Montana Department of Natural Resources and Conservation~~State Lands~~;
- U.S. Fish and Wildlife Service; and
- U.S. Bureau of Land Management.~~; and~~
- ~~Tongue River Railroad Company.~~

~~The ICCSTB will act as the lead agency to coordinate the Task Force. Each participating agency, as well as TRRC, shall designate representative(s) to work with the Task Force.~~

A.2 Aquatic

Impacts to aquatic resources from TRRC's proposed Western Alignment ~~Extension~~ are likely to occur only in those areas where the railroad grade directly infringes upon ~~the~~ a stream bank or stream bed. Such places include river crossings requiring bridge construction and areas where rip-rap is required for stream bank stabilization. In coordination with state agencies, primarily the Department of Fish, Wildlife, and Parks (MFWP), TRRC would proceed with detailed, site-specific inventory work of potential impact sites, upon the completion of final engineering. Based upon the results of TRRC's inventory, specific mitigative measures would then be determined by the appropriate Federal, state and local agencies in consultation with TRRC. Inventory measures would include the following:

(1) Aquatic Resource Sampling—For those locations where the proposed Western Alignment~~Tongue River Railroad~~ would cross the Tongue River, or where extensive rip-rapping would occur, TRRC would conduct a three part study plan to identify aquatic resources. The results of this study would be utilized in the development of mitigation plans. This study would include: (a) a stream habitat survey to identify existing habitat features and values; (b) benthic macroinvertebrate sampling to identify community composition and numbers; and (c) fish habitat spawning survey to determine the importance of the area to

spawning of game fish. TRRC would undertake the three part study methods outlined below:

a. Stream Habitat Survey. The stream habitat survey would utilize methods described in "Methods for Evaluating Stream, Riparian, and Biotic Conditions." (William S. Platts, Walter F. Meoahan, and G. Wayne Mimshall, "Methods for Evaluating Stream, Riparian, and Biotic Conditions," *General Technical Report* Int-138, Intermountain Forest Range and Research Experiment Station, Ogden, Utah.) Stream transects would be established in appropriate locations to evaluate existing conditions and to monitor changes during construction. Along each transect, the following variables would be measured:

1. stream width
2. stream shore depth
3. stream average depth
4. pool (ft.)
   (a) quality
   (b) forming feature
5. riffle (ft.)
6. run (ft.)
7. substrate
8. stream bank soil alteration rating
9. stream vegetative stability rating
10. stream bank undercut and angle
11. vegetation overhang
12. embededness

b. Benthic Macroinvertebrates—Quantitative samples of benthic macroinvertebrates would be collected immediately upstream and downstream of each proposed location of disturbance. The collected specimens would then be counted and identified at least to genus and to species where possible. The composition of the community would be described.

c. Fish Spawning Survey. A game fish habitat evaluation and, if necessary, spawning habitat potential survey would be conducted at each proposed bridge location as well as areas of proposed extensive rip-rapping. Sampling periods for the spawning survey would be early spring after ice breakup, after peak runoff, and in the fall. Collection methods would include electro-shock, seining, trap netting, and fry sampling.

(2) Mitigation Techniques. Once TRRC has completed sampling and has obtained detailed data on the aquatic resource to be affected, appropriate mitigation measures can be developed. These mitigation measures may include the following:

a. Preparation of a construction schedule which, if possible and practical, provides for instream work at those times that are (1) least critical to the specific fishery or aquatic resource occurring at a site, and (2) least conducive to sediment transport. These periods would differ by stream and species affected.

b. Development of special procedures for the handling of displaced materials and petroleum products in order to prevent introduction of such materials into the aquatic system. These procedures would be dictated by site specific geographic and construction criteria.

c. Filtering silty water, which will result from dewatering for footing construction, through settling pond systems.

d. Assuring that rip-rap is washed and essentially silt free.

e. Double-shifting of work crews at river crossing sites to minimize the duration of construction activities in or near stream banks.

A.3 Terrestrial

Two areas of concern are addressed under the overall heading of terrestrial ecology: (1) wildlife, and (2) vegetation. The thrust of the terrestrial mitigation plan, in addition to developing specific ameliorative measures, will be to provide additional information and options for avoiding unnecessary impacts to vegetation and wildlife.

~~As a participant in the aforementioned Multi-agency/Railroad Task Force,~~ In coordination with agencies and adjacent landowners~~stakeholders,~~ the TRRC would ~~discuss~~evaluate implementation of ~~a number of~~ mitigation measures that have been developed by MDFWP~~and as discussed above~~. However, it should be noted that, as with the TRRC original 89-mile rail line, a number of these provisions could conflict with the wishes of the adjacent landowners. Implementation of any of these measures, therefore, would have to be reasonable, practicable, and take into account the concerns of all parties. TRRC would implement the following types of mitigation measures:

(1) The participation by TRRC in the development of a "compensation" program for lost wildlife habitat along the rail line. For example, this compensation could include the purchase by the TRRC of "cutoff" land parcels containing good wildlife habitat, and the donation of these lands to the MDFWP for beneficial wildlife management.

(2) The construction of ponds adjacent to, or using the railroad grade as a dam where practicable. This activity could include "dugout" type ponds and "bypass" ponds designed to be filled during high flows.

(3) The providing of public access, in appropriate locations, along the rail line ROW, after assuring implementation of all safety measures.

(4) The granting of conservation easements by TRRC along the rail line.

(5) Fencing that would not restrict the movement of big game animals seeking to cross the railroad ROW. In consultation with stakeholders, ~~the Multi-agency/Railroad Task Force,~~ the TRRC would consider innovative means to ensure wildlife movement across the ROW.

A.3.1 Wildlife

The types and amount of wildlife habitats that will be lost during construction of the proposed Western Alignment~~Extension~~ have been identified in the impacts section of this ~~draft EIS~~Environmental Report. Avoidance by wildlife of normal use areas adjoining the construction site is considered to be a short term impact that will be mitigated by the completion of construction. Wildlife will reoccupy those areas where their normal use patterns have been disrupted. Mitigation of other impacts, however, requires identification of those sites where impacts may occur. Once sites are identified, numerous mitigation techniques can be developed and implemented by TRRC to deal with specific cases. The following methods can be used by TRRC to identify affected sites:

(1) Aerial Survey - TRRC would conduct an updated aerial survey during the winter before construction begins. An aerial survey may identify new winter ranges as well as locate any new prairie dog colonies, if any, along the route.

(2) Ground Reconnaissance - A thorough ground reconnaissance would be conducted by TRRC between April 15th and May 15th. During this period, grouse leks will be active, raptors will be nesting, and winter ranges may still be identifiable. The entire ROW would be surveyed, preferably by walking.

- The purpose of reconnaissance will be to locate (a) big game winter range based on evidence, such as animal remains, hair, pellet groups, etc.; (b) any prairie dog colonies that were not recorded during the aerial survey; (c) sage grouse and sharp-tailed grouse leks; and (d) raptor nests, particularly golden eagles and prairie falcons. Evidence of threatened or endangered species, such as black-footed ferrets and peregrine falcons, would also be identified during the reconnaissance.

- Any specific use sites that are identified during the reconnaissance would be mapped, described in field notes, photographed and evaluated for significance. Nesting raptors of concern would not be disturbed. Nests would be described as active or inactive.

- Sage and sharp-tailed grouse leks would be located by listening for displaying males at dawn. Lek locations would be mapped.

- Any prairie dog colonies that are intersected by the ROW would be mapped to their approximate size on 1:24,000 USGS topographic maps. Following the field reconnaissance, the size of these colonies would be planimetered and a rough estimate of the existing population should then be made by comparison with results reported in the literature.

- Any prairie dog colonies also would be searched for evidence of black-footed ferrets, following the methods outlined in "Handbook of Methods for Locating Blackfooted Ferrets." (T.W. Clark, T.M. Campbell III, M.H. Schroeder, and L. Richardson, "Handbook of Methods for Locating Blackfooted Ferrets," U.S. Bureau of Land Management, *Wildlife Technical Bulletin* No. 1 (1983), Cheyenne, Wyoming.) Ferret presence is most easily detected in late summer and during winter (December 1 - April 15). The search along the ~~Tongue River Railroad~~Western Alignment ROW would occur during this period, when evidence is most easily discerned.

- Any colonies affected by the right-of-way would be searched at least once and preferably three times. All colonies would be surveyed on foot, by walking transects spaced approximately 50 m apart back and forth across the colony. Any evidence of ferrets, such as digging, tracks, scats, skulls, etc., would be photographed and, where appropriate, collected. Scats and skulls would be identified following the keys in the "Handbook." If ferret evidence is found, the proper authorities would be notified consistent with the procedures of the Endangered Species Act.

- Similarly, although it is not likely that nesting peregrine falcons will be found along the ROW, any occurrence of nesting activity would be properly recorded and reported.

A.3.1.1 Mitigative Measures

TRRC would implement all reasonable and practical measures that result from the ~~completion of the~~Biological Assessment ~~which TRRC would conduct in coordination with the U.S. Fish and Wildlife Service~~and any other studies conducted during final engineering. The following are the types of mitigation measures that may be required:

(1) Construction Timing. A principal mitigation measure to protect wildlife involves the coordination and timing of construction activities. For example, all reasonable attempts would be made to minimize construction at big game wintering sites from December through March.

(2) Blackfooted Ferrets. If blackfooted ferrets or their evidence are found in any affected prairie dog colonies, appropriate regulatory authorities would be consulted. It may be necessary to examine these sites on several occasions to determine whether or not ferrets are currently present in the colony. If a ferret population is present, the proper authorities would be consulted to determine the probable long term impact to ferrets if construction proceeds through the colony.

(3) Raptors. TRRC construction activities along the Western Alignment~~TRRC preferred alignment~~ may affect one known bald eagle nest site, located approximately ~~8~~ 2.5 miles north of the Tongue River Dam. To mitigate impacts to this site, and any other active sites that may be located during future surveys, TRRC would avoid construction activities in the immediate area between April 1 - June 30, the critical incubation and rearing times.

A.3.2 Vegetation

Vegetation concerns related to the construction and operation of the proposed ~~Extension~~Western Alignment project are primarily divided into two categories (1) reclamation, and (2) noxious weed control. Reclamation of devegetated areas is important for a variety of reasons, including the prevention of erosion, limitation of air pollution by fugitive dust, contribution to the stability of the railroad grade, and the importance of providing wildlife habitat. Noxious weed control is an area of great concern to local agricultural operations and will be a priority of TRRC operation and maintenance personnel.

(1) Reclamation. TRRC would implement reclamation and revegetation of the ROW at the earliest possible time after clearing has been completed. Revegetation would be implemented only in those ROW areas with adequate substrate and grade. In most cases, such revegetation cannot begin until construction is complete. However, wherever possible, construction and attendant revegetation would be expedited. The following are general practices that would be employed in the reclamation process:

a. Preconstruction Planning. Successful reclamation begins with thorough preconstruction planning. TRRC would include the following elements in its reclamation preconstruction planning:

1. Designation of sensitive areas.
2. Proposed time schedule of construction activities.
3. ROW clearing and site preparation plans.
4. Erosion and sediment control plans.
5. Waste disposal plan.

6. Restoration, reclamation, and revegetation plan.

b. Restoration/Reclamation Plan. TRRC would include the following elements in its restoration and reclamation plan:

1. Commencing reclamation as soon as practicable after construction ends, with the goal of rapidly reestablishing ground cover on disturbed soils, with all cut and fill slopes (that could support vegetation) mulched and seeded as they are completed.

2. Avoiding reclamation when soil moisture is high or ground frozen.

3. Analyzing site soil requirements and seasonal precipitation patterns to identify planting dates for optimal revegetation success.

4. Use of rapidly establishing plant species for thorough and rapid ground surface protection.

5. Retaining a reclamation specialist to determine specific procedures for reclamation on steep slopes or locations near waterways.

c. Revegetation Success Assurances. To ensure revegetation success, TRRC would implement the following measures:

1. Determination of type and quantity of seed, kind of fertilizer, and other soil amendments would be made based on soil chemical and physical properties, with emphasis on native species where possible.

2. Topsoil would be segregated from subsoil and stockpiled for later application on the reclaimed ROW.

3. Only seed of registered quality and germination success would be utilized.

4. Appropriate seeding techniques would be used, such as drill seeding on level terrain and broadcast or hydroseeding on slopes to ensure distribution of seed mixture on individual micro-environments.

5. TRRC would use mulch material, such as straw and wood-chips, as a temporary erosion measure and to minimize soil temperature fluctuations and soil moisture loss. Mulch would be applied more heavily on slopes than on level terrain and nitrogen levels adjusted to reflect the increased demand during mulch decomposition.

6. The seeded area would be covered and compacted following seeding.

7. A minimum of 20 lbs/acre of pure live seed would be used throughout the route.

8. For slopes and construction areas near waterways, a variety of methods including sediment raps, berms, slope drains, toe-slope ditches, diversion channels, sodding, and mulching would be used.

9. Reclamation would be monitored, and regrading would be undertaken for eroded surfaces and revegetating areas not successfully reclaimed.

d. Provisions for Areas of Special Concern

1. Stream Crossings. TRRC would stabilize banks with naturally occurring trees, shrubs, and grass. Rip-rap or gabions would be used only as a supplementer where such methods would improve fish habitat, or in cases where engineering requirements so dictate.

2. Construction Sites. TRRC would remove all litter, debris, and soils associated with petroleum spills prior to reclamation. A State-approved landfill would be used.

3. Slopes Greater Than 3:1. On cut and fill slopes steeper than 3:1 but less than 2:1, TRRC would construct serrations ~~parallel~~<u>perpendicular</u> to the slope to avoid erosion and to stabilize seed beds. Mulching and seeding would be conducted using hydro-seeding/mulching equipment. Every attempt would be made to minimize foot traffic on the reclaimed slopes until vegetation is well established.

(2) Noxious Weed Control. The first step in the control of noxious weeds is reclamation of disturbed land along the railroad construction corridor before use by the railroad. This will limit bare soil required for optimal

weed colonization. Following establishment of revegetation species and coincident with the beginning of rail transport, TRRC would implement a noxious weed control program. This program is intended to control all Montana designated noxious weeds. It is not intended to control other invader grass and weed species.

The noxious weed control program would most likely include a combination of mechanical and herbicide spray methods. TRRC would generally use mechanical removal of weeds near water courses, depending upon time of year. A spraying program would generally employ 2-4D at one pound per acre beginning June 1st and at monthly intervals until late September. This formulation would be used on all areas of the ROW, except near waterways. If a spray is needed near watercourses, Weedar64 (a nontoxic form of 2-4D amine) would be used. The spray sequence has been chosen to ensure that weed plants do not reach maturity.

TRRC would use all precautions normally required around herbicides. TRRC would use 2-4D amine, rather than 2-4D ester, because of its lower volatility. TRRC would keep and reference records of application dates to ensure that the noxious weed control program goals are fulfilled.

TRRC would conduct all noxious weed control activities according to all applicable regulations and guidelines, and would coordinate with local weed control districts. In all cases, only trained, licensed, personnel would be involved in noxious weed control applications. TRRC would coordinate with local ranchers in the overall development of this plan.

6.9 Wildlife Mitigation Measures

(1) TRRC (in cooperation with MT FWP) will expand its ground and air survey program to include seasonal surveys showing where pronghorn are concentrated and their distribution and movement. From this information, TRRC shall assess and minimize impacts from the proposed right-of-way.

(2) TRRC will place fencing to accommodate seasonal migration, in compliance with the <u>BLM Fencing Handbook</u>, to protect ranching operations, while allowing for pronghorn movement.

6.10 Cultural Resources Mitigation Measures

(1) TRRC will comply with the provisions of the proposed PA, see Appendix G of the <u>current document</u>~~1996FEIS~~, or a final PA, if one is executed.

(2) TRRC, in the preparation of the cultural resource inventory described in the PA, shall invite Northern Cheyenne tribal representatives to identify and

compile a list of traditionally-important plants occurring in the area of potential effect and of gathering sites and access points for these plants. TRRC shall use this information in considering the need to protect and assure continuing access to these plants.

6.11 Tongue River Dam ~~Reconstruction~~Integrity Mitigation Measures

(1.) During construction of the rail line, TRRC shall provide 24-hour a day access to the MT DNRC for the ~~construction and~~ maintenance of the Tongue River dam either via the construction of temporary roads and/or flagging devices or by other reasonable alternatives. [Note: Simultaneous construction is unlikely; dam reconstruction will be complete before Western Alignment rail construction starts.]

(2) Before construction, TRRC shall coordinate development of the geotechnical drilling program near the dam with MT DNRC. Once the results of the drilling are completed, TRRC along with input from MT DNRC, ~~will~~shall determine the best engineering method for removal of the cut material. If blasting is necessary, the charges will be designed to insure that there will be no adverse ~~affect~~ effect to the integrity of the dam. TRRC shall notify MDNRC if any blasting is to occur within two miles of the dam and spillway. TRRC shall monitor the concrete structures and design the blasts to limit peak particle velocity to two inches per second at the spillway.

Chapter Seven

CHAPTER SEVEN

Informal Consultation and Initial Agency Comments

In an effort to identify federal and state agency concerns, TRRC staff and staff from TRRC's environmental contractor, Radian International LLC (Radian) attempted to gather information and initial comments from environmental agencies regarding the Western Alignment. These comments were used to help prepare this Environmental Report. These same agencies and the public will have an opportunity to make additional formal comments during the EIS process.

On January 28, 1998 there was a general briefing on Montana coal development and the Tongue River Railroad that was held in the Governor's Office in Helena. Ms. Linda Reed, Senior Economic Development Advisor to the Governor, conducted the briefing. The briefing included a presentation from Mike Gustafson, president of Wesco Resources, on the status of the Tongue River Railroad in general and the Western Alignment in particular. There were approximately 27 persons in attendance, primarily representatives of state regulatory agencies. A photocopy of the sign-in sheet of those in attendance is presented in Appendix A, Coordination and Consultation.

On the afternoon following the meeting, Radian and TRRC staff met with representatives of the following agencies in a series of individual meetings to present detailed route maps and discuss tentative plans:

- Montana Department of Natural Resources and Conservation (Helena and at Tongue River Dam);
- Montana Department of Transportation; and
- Montana Fish, Wildlife & Parks (Helena and Miles City offices).

Issues raised by the Montana Department of Natural Resources and Conservation included possible impacts on the Tongue River Reservoir dam project now in process, hydrological impacts at river crossing, possibility of blasting affecting integrity of dam, easements for crossing state-owned lands, and water rights for water withdrawals by TRRC for use in dust suppression and compaction, coincident timing problems of dam and railroad construction, cultural and historic site identification, and potential disturbance of survey control monuments.

Issues raised by the Montana Department of Transportation included road relocation and the need for road crossings to meet agency design requirements.

Issues raised by the Montana Fish, Wildlife & Parks included the large amount of cut and fills as well as associated erosion and sediment deposits in the river, proximity of the Western Alignment to the recreation areas at the Tongue River Reservoir, and the need for wildlife mitigation to be coordinated with on-going mitigation efforts resulting from the Tongue River Reservoir dam improvement project.

In addition to these in-person meetings, these agencies and several other state and federal agencies were sent letters asking for comments. A copy of the letter soliciting comments, a list of all agencies for which comments were requested, and copies of letters received as of mid-March, 1998 are all included in Appendix A. The agencies responding include the following:

- Department of Army, Corps of Engineers, Omaha District;
- Montana Department of Transportation;
- Montana Natural Heritage Program;
- Montana Department of Natural Resources and Conservation;
- Montana Fish, Wildlife, and Parks; and
- U.S. Department of Agriculture, Natural Resources Conservation Service.

EPA Region VIII (Steve Potts) indicated in a telephone call that EPA would wait until the ER was completed before EPA would develop comments.

Appendix A
Coordination and Informal Consultation

APPENDIX A
Coordination and Informal Consultation

- Sign-in Sheet for Project Briefing in Governor's Office (1 page)
- Sample letter requesting comments (2 pages)
- List of Federal Agencies given letter and information packet (1 page)
- List of State Agencies given letter and information packet (1 page)
- Comment Letters received as of February 25, 1998 (multiple pages)

1/20/98 - Coal Briefing

Name	Agency	Phone
BOB DAVIS	Radian International	512 419 5237 [AUSTIN, TX]
Newell Anderson	Mt. Dept of Commerce	444-4480
Murdo Campbell	Coal Board/Advisor	443-5190
Thurston Dotson	FWP	444-2447
[illegible] KNAPP	FWP	444 2612
Tim Gallagher	FWP	444-2448
Don Sterhan	Tongue River Railroad	252-5695
JOE LAMSON	OPI	444-3160
Richard Parks	NPRC	248-7314
John J. Grinsell	Northern Cheyenne Tribe	477-6284
Russ Rudolph	RADIAN INTERNATIONAL	(703) 683-0102
Mick Robinson	Governor's Office	444-3111
Jeff Hagener	DNRC	444-4978
Wayne Wetzel	DNRC	444-6722
ANDY POOLE	DOC	4-3797
Steven A. Kelly	Northern Cheyenne Tribe	477-6750
Rusty Harper	St Auditor's Office	444-2725
Helen Hollenbaugh	MT Dept. of Justice	444-2026
Jan Sensibaugh	MT DEQ	444-5270
Neil Harrington	MT DEQ	444-4973
STEVE WELCH	MT DEQ	444 4964
Lynn Zanto	MDT	444-6303
DAVE GALT	MDT/MCS	444 7638
Jim Currie	MDT	444-6201
Janie Lapeyre	Governor's office	444-3111
TOM EBZERY	Atty Tongue River RR	245-4881
Doug Day	Tongue River RR Prog. [illegible]	252-5695

~~[illegible]~~

RADIAN INTERNATIONAL LLC

(Mailing) P.O. Box 201088
Austin, TX 78720-1088
(Shipping) 8501 N. Mopac Blv
Austin, TX 78759
(512) 454-4797

January 27, 1998

Mr. John F. Wardell
Director, Montana Operations Office
U.S. Environmental Protection Agency
Federal Building
301 S. Park - Drawer 10096
Helena, MT 59626

Re: Request for Comments on Environmental Concerns Related to Proposed Tongue River Railroad Western Alignment Construction Project

Dear Mr. Wardell:

On December 19, 1997 the Tongue River Railroad Company (TRRC) notified the Surface Transportation Board (STB) of its intention to file an application for construction and operation of the Western Alignment, a 17-mile section of railroad line in Rosebud and Big Horn Counties, Montana. The Western Alignment would be constructed in lieu of the Four Mile Creek Alternative approved by the STB in November 8, 1996 in Finance Docket No. 30186 (Sub-No. 2). Radian International, LLC (Radian) has been contracted by TRRC to prepare an Environmental Report of the Western Alignment.

TRRC's most recent proposal is limited to the last 17 miles of an approximately 120-mile line connecting Miles City with Decker. To put this latest proposal in context, we are including an attachment describing the background to our ER. Also, two enclosed maps show the location of the Western Alignment along with TRRC's Original Preferred Alignment and the Four Mile Creek Alternative. One map is a small scale colored map showing the entire route of the already approved Tongue River Railroad and the proposed Western Alignment; the other is large scale collection of USGS quad sheets that show details of the Western Alignment and the alternative routes.

In summary, the Western Alignment was designed to avoid the environmental impacts associated with the Original Preferred Alignment and the environmental, safety, and operating problems associated with the Four Mile Creek Alignment. The STB has determined that an Environmental Impact Statement (EIS) will be required to satisfy the STB's National Environmental Policy Act (NEPA) rules at 49 CFR 1105. The ER that Radian is preparing, with assistance from several Montana engineering and environmental firms, will form the basis of the EIS. Because the entire Tongue River Railroad has already been the focus of the two EISs resulting in Interstate Commerce Commission (ICC) approvals in 1986 and 1996, the focus of this new ER will be on the final 17 miles (the Western Alignment) rather than the entire line.

We request that you inform us of any concerns you may have with respect to the following issues:

- Local land use;
- Biological resources including threatened or endangered species, critical habitats, refuges and parks;
- Water resources, including water quality, wetlands, and floodplains;

RADIAN
INTERNATIONAL LLC

- Adverse impacts to Indian communities, minority communities, or low income communities;

- Historic, cultural or archeological resources; and

- Any other issues such as air quality.

Also, specifically, we would like to know the following:

- How does the Western Alignment meet environmental concerns that were posed by the other two alignments?

- Does the Western Alignment exacerbate any environmental impacts that were posed by the other two alignments?

- Are there any new environmental concerns that are created by the Western Alignment?

We also request that you provide citations to any permitting or other approval authority that your agency may have over the proposed action.

We would appreciate receiving the requested information at your earliest convenience. If we receive your response by February 15, 1998 we will make an effort to address it in the ER, which TRRC will submit with its application. Responses received after both the TRRC and the STB in their ongoing environmental review process.

You may submit the requested information either by calling Bob Davis at (512) 419-5237, by telefaxing Radian at (512) 345-9684, or by mailing a response to the address listed above. If your comments include references to specific locations, it would be helpful if you would mark them on one of the enclosed maps. You will receive a copy of the ER, at which time you will be able to comment on the document. Please call me at the above listed phone number if you have any questions about this request for your comments. Thank you very much for your prompt assistance.

Sincerely,

Bob Davis

Bob Davis
Senior Staff Scientist

U.S. Army Corps of Engineers

Regional Office

Candace Thomas
Chief, Environmental Analysis Branch
NWO-PD-M
U.S. Army Corps of Engineers
Omaha District
215 N. 17th Street
Omaha NE—68102-4978

Field Office

Mores Bergman
Construction Operations Division
CENWR-ET-C
U.S. Army Corps of Engineers
12565 W. Center Road
Omaha NE 68144-3869

NATIONAL PARK SERVICE

Regional Office

John E. Cook
Regional Director
National Park Service
Intermountain Region
P.O. Box 25287
12795 W. Alameda Parkway
Denver CO 80225-0287

NATIONAL RESOURCES CONSERVATION SER

(was Soil Conservation Service)

Jeff Vonk
Regional Conservationist
U.S. Natural Resources Conservation Service
100 Centennial Mall North
Federal Building,Room 152
Lincoln NE 68508

EPA

Regional Office

Cindy Cody
(no title)
8EPR-EP
U.S. Environmental Protection Agency
Region VIII
999 18th Street
Denver CO 80202

Field Office

John F. Wardell,
Director, Montana Operations Office
U.S. Environmental Protection Agency
Federal Building
301 S. Park
Drawer 10096
Helena MT 59626

U.S FISH AND WILDLIFE SERVICE

Regional Office

Ralph Morgenweck
Regional Director
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver CO 80225

Field Office

Kemper McMaster
Field Supervisor
U.S.Fish and Wildlife Service
100 North Park, Suite 320
Helena MT 59601

U.S. Geodetic Survey

Ed McKay
Chief of Spatial Reference
National Geodetic Survey
1315 East-West Highway
Building 13, Room 8813
Silver Spring MD 20910-3282

Bud Clinch, Director
Department of Natural Resources and Conservation
1625 Eleventh Avenue
P.O. Box 201601
Helena, Montana 59620-1601

(telephone 406-444-2074)

Mark Simonich, Director
Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901

(telephone 406-444-2074)

Pat Graham, Director
Montana Fish, Wildlife & Parks
1420 E 6th Avenue
P.O. Box 200701
Helena, Montana 59620-0701

(telephone 406-444-5670)

Marv Dye, Director
Montana Department of Transportation
2701 Prospect Avenue
Helena, Montana 59620-9726

(telephone 406-444-6200)

Peter Blouke, Director
Montana Department of Commerce
1424 Ninth Avenue
Helena, Montana 59620

(telephone 406-444-3494)

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

MARC RACICOT, GOVERNOR

1625 ELEVENTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

PO BOX 201601
HELENA, MONTANA 59620-1601

February 12, 1998

Mr. Douglas A. Day
Radian International
P.O. Box 1181
Billings, MT 59103

Dear Mr. Day:

The Department of Natural Resources and Conservation (DNRC) appreciated the opportunity to discuss potential scoping issues on January 28, 1998. At that meeting we generally discussed items which involved issues within the purview of DNRC, but also discussed some items that might concern other permitting agencies. This letter will be confined to the issues primarily of interest to DNRC, as other agencies will respond individually with their issues.

Following are brief write-ups that memorialize our earlier comments on the Western Alternative being proposed by the Tongue River Railroad. The last of the items listed was not brought up at the meeting in January, but may have been mentioned by John Sanders when you met with him at the Tongue River Dam project office.

♦ Stream crossing issues related to flood routing and floodplain obstructions.

The Western Alternative alignment eliminates all five bridges between the dam and Fourmile Creek that would have been required of the original preferred alignment. Further, the newly proposed alignment would move the first river crossing roughly 6 air miles down river from the crossing permitted in the Fourmile Alternative. This first Tongue River crossing would be approximately one-half mile downstream of the county road bridge near Matt McKinney's ranch house (T6S, R42E, sec. 32). Tongue River Railroad 's analysis of this bridge should include: backwater effects of the railroad bridge in general, effects on the road and the county's bridge, and effects on the McKinney house. As a minimum, the analysis should include: the lowest flow that impacts either the bridge or the house, the lowest flow that floods the county road, a flow of 60,000 cfs, a clear weather breach of Tongue River Dam, and a probable maximum flood (PMF) breach of the dam. Tongue River Railroad should commit to working with DNRC on the flood routing and the analysis of impacts of the railroad bridge.

♦ Easements on one section of school trust land and over a short portion of DNRC land associated with the Tongue River Reservoir.

Both maps provided by Tongue River Railroad show the Western Alternative barely crossing the southeast corner of section 36 in T6S, R41E. The quad-scale overlay seems to indicate a crossing of approximately 400 lineal feet. The crossing of Water Resources Division land is only slightly longer. The overlay shows a crossing of from 800 to 1,000 lineal feet in the southwest corner of section 12, T8S, R40E. This is land recently purchased from Mike Markovsky in furtherance of the dam rehabilitation project. As you may be aware, "water" land is held and treated separately from "trust" land. It appears Tongue River Railroad will need two separate and different easements from DNRC. DNRC will commit to internally coordinating these easement applications to minimize problems with the easement application process.

♦ Water rights for temporary use for dust control and compaction.

By the time this segment of Tongue River Railroad is under construction, DNRC should be finished with the rehabilitation of the dam and the subsequent satisfaction of the Northern Cheyenne Tribe's new reservoir water storage portion of the Compact. This seems like a likely source of water for the proposed new alignment being considered under the current action. Tongue River Railroad may also want to check with the Tongue River Water Users Association for a portion of their contract water as the source of water for the other portion of the railroad that is intended to be constructed earlier. During the non-irrigation season, there may be water available for a temporary water use permit if flows in the Tongue River exceed the Department of Fish Wildlife and Parks instream reservation.

♦ Cooperation in developing blasting plans for any blasting in the vicinity of the Tongue River Dam.

DNRC assumes the railroad cut at Leaf Rock Creek (approximately one mile from the dam) will require blasting. As well, some of the rough terrain "down route" from Leaf Rock Creek may require blasting within roughly the same distance of the dam. Our recollection of the original plans required a 90 to 100-foot cut at Leaf Rock Creek. DNRC recently ripped a 30-foot cut for our new road just west of our office. Based on our experience, Tongue River Railroad may, or may not, be able to rip their cut at Leaf Rock Creek. DNRC would like to reaffirm language assuring the cooperation we asked for during the last planning/EIS process regarding development of a blasting plan near the dam. In addition to the previous commitment, we ask that, if Tongue River Railroad does any blasting within two miles of the dam and new spillway, they monitor the new concrete structure(s) at the dam and design their blasts to limit peak particle velocity to 2 inches per second at the new spillway. We believe this to be a reasonable request since blasting at nearby coal mining operations are noticeable at the dam from distances even farther away.

♦ Avoidance or mitigation of any fill encroachment on the new county road alignment constructed to accommodate the ongoing rehabilitation work at Tongue River Dam and continued safe, future access to the dam.

DNRC made the same comment during the last EIS process and the mitigation plan developed then contained the commitment to mitigate any effects. Our present understanding is that the Western Alternative will be far enough west of our road and box culvert at Leaf Rock Creek that there will be no interference. However, it was noted that the alignment was subject to future adjustments before construction. Should an alignment change result in encroachment, DNRC would expect a commitment to mitigate similar to that developed earlier.

♦ Coincident timing problems if railroad construction overlaps any of the rehabilitation work at the dams site.

Tongue River Railroad will likely be on a schedule that shows their work beginning after our work is complete. However, if this segment is somehow approved and construction expedited while work is ongoing at Tongue River Dam, we would expect cooperation and coordination of work to avoid any interference between our respective contractors, particularly along the access route to the dam site.

♦ Adequate survey of historical, archaeological, and paleontological resources along the route and alternatives.

While this is more within the purview of the State Historic Preservation Office, it is mentioned here because of DNRC's knowledge of local sites resulting from our own construction project. Tongue River Railroad is aware they have yet to fully comply with Section 106 of the National Historic Preservation Act or Montana's Antiquities Act and must do so. The proposed Western Alternative will pass through site number 24BH2601 at their Leaf Rock Creek crossing. This is the site of a "shanty town" that grew up around an old dance hall (Grange?) during original construction of the dam. Our cultural resources subcontractor recommended this site as eligible to the National Register of Historic Places. Since we avoided the actual site with our road construction, we did not consult on the site and, therefore, a final determination of eligibility was not made as part of our Section 106 process. The Surface Transportation Board (and, therefore Tongue River Railroad and/or its contractors) will be required to consult on the eligibility of that site and if it is determined to be eligible, mitigate it. Tongue River Railroad should also be aware of the fact that there may exist within the Tongue River Valley a rural historic district based on vernacular architecture and the use of readily available building materials, i.e. stone. This may require quite a bit of historic research and possible mitigation relating to the entire length of the rail line. Finally, Tongue River Railroad also need to be aware that Leaf Rock Creek did not get its name for nothing. The Montana Antiquities Act (not Section 106) will apply to any paleontological remains discovered on state-owned land at the Leaf Rock Creek crossing, or on any other state-owned land, for that matter. Given the nature of this area, any cultural resources investigations will likely discover other, as yet unknown, sites along the railroad alignment. DNRC believes HRA, Tongue River Railroad's consultant, is already aware of most of these concerns.

♦ Potential disturbance of survey control monuments or BLM brass caps.
Construction of the crossing at Leaf Rock Creek has the potential to destroy one of DNRC's permanent benchmarks. As we assess the continuing need for this benchmark, we could either decide to retire that BM or require the Tongue River Railroad to replace it at a mutually agreed upon location. As well, Tongue River Railroad will be required to record any BLM monumentation encountered and to replace any that are disturbed. It is worth noting here that DNRC can provide our existing survey control in the area of the reservoir to Tongue River Railroad. This could be particularly useful in the area of Leaf Rock Creek and in the area of the connection to the Spring Creek spur.

Please consider these to be DNRC's preliminary scoping comments. If we become aware of any additional issues, we will make sure that they are brought forward during the public scoping that would occur as part of Surface Transportation Board's preparation of an EIS on the alternative. If you have any questions concerning our comments, feel free to call (406-444-6722)

Sincerely,

Wayne A. Wetzel

Wayne A. Wetzel
Special Projects Coordinator

cc: Tom Epzery - Tongue River Railroad
Russell Rudolph - Radian International
Robert Davis - Radian International
Bud Clinch
Linda Reed via email
John Sanders " "
Greg Hallsten " "
John Mundinger " "
Lynn Zanto " "
Sandy Straehl " "
Dwayne Andrews via fax
Don Kendall via fax

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
215 NORTH 17TH STREET
OMAHA, NEBRASKA 68102-4978
February 25, 1998

REPLY TO
ATTENTION OF

Planning Division

Mr. Bob Davis
Senior Staff Scientist
Radian International
P.O. Box 201088
Austin, Texas 78720-1088

Dear Mr. Davis:

We have reviewed the Tongue River Railroad Company's (TRCC) Western Alignment, a 17-mile section of the railroad that would be constructed in lieu of the Four Mile Creek Alternative Segment of the 51-mile extension approved in 1996. Your letter states that environmental compliance, in the form of the ER that Radian is preparing will only be done on the 17 mile section, since the entire Tongue River Railroad has already been the focus of two EIS's.

We have enclosed our last correspondence regarding TRRC's proposed railroad lines, dated May 24, 1996 for your review. We would like to reiterate that the Corps will be reviewing the Tongue River Railroad track in its entirety, since all previously issued permits have expired, and the project, although presented piece-meal, is essentially the construction of one continuous track by the TRRC. In addition, environmental compliance for the original 89-mile track was completed in 1985, and environmental conditions have likely changed since then. Wetland delineation was never done for the 89-mile segment, and the EPA has stated in writing that there are less damaging alternatives than the alternative that was approved at that time. In short, current environmental compliance for the entire track, the original 89-mile stretch, the part of the 51-mile stretch that is still going to be used, as well as the new 17-mile track, is needed in conjunction with the 404 permit needs prior to construction.

Environmental concerns specific to the 17-mile Western Alignment can only be roughly determined without on-site visits and additional information on local vegetation. However, it is apparent from the U.S.G.S. map enclosed with your letter that the Western Alignment crosses the Tongue River, Prairie Dog Creek, Spring Creek, South Fork Canyon Creek, Fourmile Creek, Post Creek, Leaf Rock Creek, Monument Creek, and several "draws." Therefore, wetland delineation and a functional analysis of these creeks and adjacent wetlands is needed. Additional information on the specifics of construction across these creeks is also needed in order to better determine impacts. Coordination with the U.S. Fish and Wildlife Service is needed to determine impacts to federally listed species, if any. Coordination with the State Historical Preservation Officer (SHPO) is also needed to determine if there are any impacts to cultural or historical sites.

There isn't enough information to determine how or if the Western Alignment meets or exacerbates any environmental concerns that were posed by previous alignments at this time. We recommend preparing a table of impacts for the Western Alignment and the previous alignments including acres of wetland impacted, number of stream crossings, acres of forest cleared, threatened, and endangered species impacts, cultural impacts, etc., in order to better answer these questions.

Please inform our office of the proposed alignment for the entire project so we can better determine specific supplemental NEPA needs. Only after this information is complete and you have decided on your preferred alternative, do we recommend that a permit application for the rail line be submitted.

Sincerely,

Candace Thomas

Candace M. Thomas
Chief, Environmental Analysis Branch
Planning Division

Enclosure

Copy Furnished (w/enclosure)

Ms. Dana G. White
Section of Environmental Analysis
Surface Transportation Board
1201 Constitution Avenue, NW
Washington, DC 20423

Mr. Steve Potts
United States Environmental Protection Agency
Region VIII, Montana Office
Federal building, 301 S. Park, Drawer 10096
Helena, Montana 59626-0096

Mr. Steve Oddan
U. S. Fish and Wildlife Service
2900 4th Ave. North, Room F301
Billings, Montana 59101

May 24, 1996

Operations Division

Ms. Dana G. White
Section of Environmental Analysis
Surface Transportation Board
1201 Constitution Avenue, NW
Washington, DC 20423

RE: Finance Docket No. 30186 (Sub. No. 2); Tongue River Railroad Final EIS

Dear Ms. White,

We have reviewed the referenced Final Environmental Impact Statement (FEIS) on the construction and operation of an additional 41-mile rail line from Ashland to Decker, Montana, as proposed by the Tongue River Railroad Company. The FEIS does not follow the Council on Environmental Quality (CEQ) recommended format; however, if considered within the "FEIS, DEIS, and Supplement package," these documents together may satisfy the Corps' National Environmental Policy Act (NEPA) requirements associated with the decision on whether to issue the Section 404 permit for construction of this 41-mile railroad extension. However, the longer the period of time between the FEIS and the permit application, the greater the risk for temporal changes in the baseline conditions that may require supplemental documentation. This is also true for the original 89-mile rail line (Finance Docket No. 30186, August 1985).

It is our understanding that this 41-mile extension and the original 89-mile proposal are separate parts of one larger 130-mile continuous rail line, and this should be reflected in the permit application. As a result of the 1985 FEIS on the 89-mile proposal, your agency concluded that both the applicant's proposal and the Colstrip alternative were feasible, but the Colstrip alternative was environmentally preferable. Permits were granted for the placement of fill in conjunction with the 89-mile project; however, it is unclear which alternative was being pursued. Based on the stream crossings for Otter Creek and the Tongue River, we believe that the Colstrip alternative was being pursued at that time. All permits have expired, and therefore the 404 process will essentially begin again "from scratch" for the project as a whole.

Knowing that the Corps will look at this project "in its entirety," we cannot advise your agency or the applicant in detail prior to knowing which alignments will be put forward in the permit application. For instance, do you plan on approving for construction the 41-mile "Four Mile Creek" alternative plus the 89-mile "Colstrip" alternative, or some other combination of alternatives from both FEIS's? Keep in mind that our rules require that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. This means that the Corps will require evidence that shows that the applicant has evaluated or considered less damaging alternatives for this project, and has avoided, minimized, and (as a last resort) prepared a mitigation plan for impacts to wetlands and waters of the United States. Apparently, the Environmenal Protection Agency in Denver believes that there are less damaging alternatives for the 89-mile section that have not been considered by the applicant (see footnote on page 36, 41-mile FEIS).

Once we have been notified of the project route in its entirety, we can then determine if we have sufficient information in existing NEPA documents for Corps' NEPA compliance for the 130-mile project. We would need to determine what parts of the 1985 FEIS are still valid, and which parts would need updating. We would probably request wetland delineation similar to what was done in the 41-mile FEIS, and a comparative table of impacts to wetland/waters of the U.S. by alternative for the 89-mile section, since that is lacking in the 1985 FEIS. Endangered species compliance may need to be updated, as well as coordination with other agencies. All of this information, as well as information from the 41-mile FEIS, will then be used to prepare the 404(b)(1) analysis for the entire project.

Please inform our office on the proposed rail alignment for the entire project so we can better determine specific supplemental NEPA needs. Only after this information is complete and you have decided on your preferred alternative, do we recommend that a permit application for the 130-mile rail line be submitted. At that time, the permit application for the 130-mile rail line should be submitted to:

Mr. Robert McInerney, Montana Program Manager
U.S. Army Corps of Engineers
Montana Office
301 S. Park
Drawer 10014
Helena, MT 59626

If you have any questions regarding NEPA compliance, please call Becky Latka at (402) 221-4602. If you have questions regarding the permit application, please call Larry Robson at (406) 441-1375.

Sincerely,

Richard D. Gorton
Chief, Regulatory Branch
Operations Division

CF:

Steve Potts
United States Environmental Protection Agency
Region VIII, Montana Office
Federal Building, 301 S. Park, Drawer 10096
Helena, Montana 59626-0096

Steve Oddan
United States Fish and Wildlife Service
2900 4th Ave. North, Room F301
Billings, Montana 59101

CEMRO-OP-R (Iske)
CEMRO-OP-R-MT (McInerney / Robson)

Latka

Thomas

Gorton

Montana Fish, Wildlife & Parks

P. O. Box 200701
Helena, MT 59620-0701
(406) 444-3186
FAX:406-444-4952
Ref:PG0084.98
January 30, 1998

Bob Davis, Senior Staff Scientist
Radian International, LLC
PO Box 201088
Austin TX 78720-1088

RE: ENVIRONMENTAL REPORT FOR TONGUE RIVER RAILROAD COMPANY'S PROPOSED WESTERN ALIGNMENT

Dear Mr. Davis:

Thank you for the time that you, Mr. Rudolph and representatives from the Tongue River Railroad and the Montco Mine spent to meet with members of my staff in Helena. I also appreciate your willingness to meet with Department personnel in our Miles City office to discuss Department concerns related to the environmental report that your are preparing for the Western Alignment.

Montana Fish, Wildlife & Parks, in our January 8, 1990 scoping comments to the supplemental EIS, indicated that the proposed route through the Tongue River canyon would negatively affect watersheds, riparian habitats, fisheries and wildlife because that route would have required several bridges, river bank rip rap and possible river channel relocation. That route also would have negatively affected recreational use at Tongue River Reservoir. Therefore, we suggested that a preferable alternative route would follow the Four Mile Creek drainage to the Spring Creek Mine.

We also have acknowledged TRRC's concerns about the additional length, increased operating costs and safety considerations of the Four Mile Alternative and have indicated that additional consideration of the Western Alternative is worthy of further review, pursuant to the National Environmental Policy Act, would be appropriate.

Given our initial understanding of the Western Alternative, the Department's primary concern relates to the possible consequences that might result from the cuts and fills required to construct that alignment and the secondary effects related to erosion and water quality. We also would appreciate a disclosure of the effects on the recreational experiences associated with the state park on the Tongue River Reservoir.

Although they do not relate specifically to the environmental report, there also are two unresolved department issues related to the Tongue River Railroad. The Miles City to Ashland alignment crosses the department's hatchery property at Miles City. Without a clear demonstration that the integrity of the hatchery system will be maintain during construction and throughout operation of the railroad, we are unable to grant an easement. I have contacted the Department of Transportation to see if alternative approaches could be accommodated.

The certificate for the Ashland to Spring Creek portion of the Tongue River Railroad stipulated measures to reduce or eliminate potential adverse environmental impacts to the terrestrial and aquatic ecology from the construction and operation of the rail line extension. These measures included establishment of a multi-agency/railroad task force for the purpose of advising, assisting and coordinating with the Tongue River Railroad. With this approach, task force members could, at their discretion, use other resources available to them to augment mitigation projects. Thereby, the aquatic and terrestrial mitigation could be more effectively implemented. We continue to be interested in this concept, but this task force has not yet been established.

Thank you for considering our comments in the preparation of the environmental report.

Sincerely,

Pat Graham

Patrick J. Graham
Director

USDA United States Department of Agriculture

Natural Resources Conservation Service

Northern Plains Regional Office
Federal Building, Room 152
100 Centennial Mall North
Lincoln, NE 68508-3866
Phone: 402-437-5315; FAX 402-437-5165

February 2, 1998

Bob Davis
Senior Staff Scientist
Radian International
P O Box 201088
Austin, TX 78720-1088

Dear Mr. Davis:

I received your letter of January 27, 1998, regarding Request for Comments on Environmental Concerns Related to Proposed Tongue River Railroad Western Alignment Construction Project.

The information needed to reply to your request is contained in the NRCS State Office in Montana. By copy of this letter, I am sending your request to our Montana State Conservationist, Shirley Gammon. If you have any questions, you may reach Shirley at:

NRCS
10 East Babcock St., Rm 443
Bozeman, MT 59715-4704
Ph: 406-587-6813; FAX: 406-587-6761

Sincerely,

Jeffrey R Vonk TAK

JEFFREY R. VONK
Regional Conservationist

cc:
Shirley Gammon, STC, Bozeman, MT

Montana Department of Transportation

Marc Racicot, Governor

February 13, 1998

Wayne Wetzel
Department of Natural Resources
1625 11th Avenue
PO Box 201601
Helena, MT 59620-1601

Subject: Tongue River Railroad
Western Alignment
Preliminary Scoping Comments

The following comments are submitted as preliminary scoping concerns of the Montana Department of Transportation to be addressed in the environmental report for the subject project.

During development of the Miles City to Ashland segment, MDT and Tongue River Railroad Company (TRRC) negotiated a memorandum of understanding (MOU) to define the procedures, roles and responsibilities related to impacts and proposed construction on highways under state jurisdiction. This MOU must be re-negotiated and updated to include the Ashland to Decker segment and any state Secondary crossings, prior to issuance of MDT approvals and permits. In addition, MDT permits will not be issued until all environmental analysis has been completed.

It is our understanding that the TRRC will be solely responsible for all costs associated with the construction and major rehabilitation of the railroad including highway work involving the proposed at-grade crossings, grade-separated crossings and roadway realignments. In addition, TRRC must comply with all pertinent statutory and regulatory requirements, including MDT design, warrants, safety and environmental requirements necessary for state roadway construction.

Although MDT does not have the authority to approve encroachment permits on the impacted Secondary routes, Federal dollars have been invested into the development of these routes and the MDT is responsible for protecting this investment. Therefore, MDT will coordinate with the Counties on the review of the impacts, proposed design and final design of the proposed Secondary crossings.

Specific transportation elements of concern which should be evaluated in the EIS include the following:

- Safety impacts to the traveling public at the at-grade crossings should be analyzed. This analysis should specifically address elements such as sight distance and alignment of the crossings. In addition, maintenance responsibility and liability at the at-grade crossings is a major concern. We expect that maintenance responsibility will be clearly identified in the MOU.

- Design standards, construction costs and legal ownership for any new Secondary road alignment should be addressed.

- Highway infrastructure should be analyzed for impacts related to the transport of construction material and construction crew transportation.

- Operational impacts on transportation should be analyzed. Operational impacts include traffic delay at the at-grade crossings and particularly the length of time traffic will be delayed and how often traffic will be delayed in Miles City.

- Traffic control during construction should be discussed.

- There are also clearly benefits to system preservation which can be derived from transporting coal via rail versus truck.

Finally, we are still awaiting additional information on the northern segment including design plans for the alignment and location of the I-94 grade separated crossing near Miles City. While it is MDT's preference that rail structures cross our highway at a ninety degree angle there is no design requirement or policy which prohibits skewed railroad crossings from being constructed. Consequently, if all applicable design standards are met, the I-94 crossing west of Miles City would be permittable. This is important to note, as skewing the I-94 crossing will probably be necessary to avoid impacting the expanded State fish hatchery.

The Transportation Planning Division will coordinate MDT's internal review of this project. Therefore, please direct review material, information and meeting requests to Sandy Straehl (406)444-7692 or Lynn Zanto (406)444-6303 of that division.

Marvin Dye, Director
Department of Transportation

cc. Russell R. Rudolph, Radian International, LLC
Tom Ebzery, Tongue River Railroad Company
Linda Reed, Governor's Office
Big Horn County Commissioners
Rose Bud County Commissioners
Pat Graham, MT Department of Fish, Wildlife & Parks
Mick Johnson, MDT Glendive District
Gary Gilmore, MDT Engineering Division
Patricia Saindon, MDT Transportation Planning Division
Sandra Straehl, MDT Program & Policy Analysis
Gary Larson, MDT Secondary Road Engineer

MONTANA NATURAL HERITAGE PROGRAM
1515 East Sixth Avenue
Helena, Montana 59620
(406) 444-3009

February 12, 1998

Patrick Farmer
WESTECH
P. O. Box 6045
Helena, MT 59604

Dear Mr. Farmer,

In response to your recent request regarding Species of Concern in the vicinity of three alternative routes for the proposed Tongue River Railroad in Rosebud and Big Horn Counties, Montana, I am enclosing 5 Species of Concern records, a document explaining the format of the enclosed records, and maps of the general area.

Keep in mind that these reports include sensitive data intended for use within your firm and that the information is not for general distribution or publication. In particular, public release of specific location information may jeopardize the welfare of a threatened, endangered, or sensitive (TES) species or community. Specific locations of federally-listed threatened or endangered species should be requested directly through U. S. Fish and Wildlife Service offices.

In the interest of protecting landowner privacy, precise location information has not been included in this report for TES species located on privately-owned lands.

The results of a data search by the Montana Natural Heritage Program are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys which may be required for environmental assessments.

We are required to send you an invoice for these services, which will arrive under separate cover. The charges incurred are:

Database access fee	$30.00
Printouts - 6 pages at .25 per page	1.50
Invoice total	$31.50

Please note, the fee can be waived if work is performed for a federal agency, State of Montana agency, or non-profit organization. When the invoice arrives, present it to the contracting agency and have them return it to the Montana Natural Heritage Program along with a note stating they have not been charged by you for the services provided by the Heritage Program. We will then cancel the fee.

I hope the enclosed information is helpful to you. Should you have any questions or require additional information, please feel free to contact me.

Sincerely,

Anne Dalton

Anne Dalton, Research Assistant
Montana Natural Heritage Program
(email: anne@nris.mt.gov)

Montana Natural Heritage Program
Species of Special Concern: Tongue River Railroad Alternative Routes
in portions of Rosebud and Big Horn Counties, Montana

Scientific Name: HALIAEETUS LEUCOCEPHALUS
Common Name: BALD EAGLE

Global rank: G4, Forest Service status: THREATENED
State rank: S3B,S3N Federal Status: LTLE

Element occurrence code: ABNKC10010.146
Element occurrence type:

Survey site name: TONGUE
EO rank:
EO rank comments: CURRENT

County: ROSEBUD

USGS quadrangle: SPRING GULCH

Township:	Range:	Section:	TRS comments:
007S	041E		

Precision: M
Survey date: Elevation: 3250 -
First observation: 1992 Slope/aspect:
Last observation: 1997 Size (acres):

Location:
CONTACT THE MONTANA NATURAL HERITAGE PROGRAM.

Element occurrence data:
RESULTS OF ANNUAL NEST SURVEYS ON FILE AT MTNHP.

General site description:
NEST SITE AND TERRITORY.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: MILES CITY DISTRICT, POWDER RIVER RESOURCE AREA

Comments:

Information source: FLATH, D. 1997. [MEMO LISTING LOCATION OF BALD EAGLE NESTS AS OF AUGUST, 1997.] UNPUBLISHED REPORT. 10PP.

Specimens:

Montana Natural Heritage Program
Species of Special Concern: Tongue River Railroad Alternative Routes
in portions of Rosebud and Big Horn Counties, Montana

Scientific Name: CHELYDRA SERPENTINA
Common Name: SNAPPING TURTLE

Global rank: G5 Forest Service status:
State rank: S3 Federal Status:

Element occurrence code: ARAAB01010.001
Element occurrence type:

Survey site name: BIRNEY
EO rank:
EO rank comments:

County: ROSEBUD

USGS quadrangle: BIRNEY

Township:	Range:	Section:	TRS comments:
006S	043E	07	SE4SW4

Precision: M
Survey date: Elevation: 3000 -
First observation: Slope/aspect:
Last observation: 1979-09-02 Size (acres): 0

Location:
GO TO BIRNEY VIA LIGHT-DUTY ROAD. SITE IS ON TONGUE RIVER NEAR BIRNEY.

Element occurrence data:

General site description:

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

Information source: ZOOLOGIST, MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVENUE, P.O. BOX 210800, HELENA, MT 59620-1800. 406/444-3009.

Specimens: CLANCEY, C. (S.N.). 2 SEPTEMBER 1977. SPECIMEN # 6349. MSBU.

Montana Natural Heritage Program
Species of Special Concern: Tongue River Railroad Alternative Routes
in portions of Rosebud and Big Horn Counties, Montana

Scientific Name: PHYSARIA DIDYMOCARPA VAR LANATA
Common Name: WOOLLY TWINPOD

Global rank: G5T2 Forest Service status:
State rank: SU Federal Status:

Element occurrence code: PDBRA22075.001
Element occurrence type:

Survey site name: SPRING CREEK
EO rank:
EO rank comments:

County: BIG HORN

USGS quadrangle: HALF MOON HILL
PEARL SCHOOL

Township:	Range:	Section:	TRS comments:
008S	039E	14	N2; 22 E2

Precision: S
Survey date: Elevation: 3800 - 4100
First observation: 1993-05 Slope/aspect: STEEP / SE
Last observation: 1993-08 Size (acres):

Location:
CA. 8 MILES NORTH-NORTHWEST OF DECKER, WEST OF ROUTE 314.

Element occurrence data:
FLOWERING MOSTLY IN MAY, BUT A FEW PLANTS STILL FLOWERING IN AUGUST.
LOCALLY ABUNDANT, 1000-2000 PLANTS.

General site description:
"SCORIA" AND SOMETIMES SHALE SUBSTRATE.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: MILES CITY DISTRICT, BILLINGS RESOURCE AREA

Comments:

Information source: BOTANIST, MONTANA NATURAL HERITAGE PROGRAM, 1515
EAST SIXTH AVENUE, HELENA, MT 59620-1800.

Specimens:

Scientific Name: ASTRAGALUS BARRII
Common Name: BARR'S MILKVETCH

Global rank: G3 Forest Service status: SENSITIVE
State rank: S3 Federal Status:

Element occurrence code: PDFAB0F150.028
Element occurrence type:

Survey site name: SPRING CREEK
EO rank:
EO rank comments:

County: BIG HORN

USGS quadrangle: PEARL SCHOOL
HALF MOON HILL

Township:	Range:	Section:	TRS comments:
008S	039E	23	NW4SE4; 15 SW4; 16 SE4; 22 NE4

Precision: S
Survey date: Elevation: 3950 -
First observation: 1989 Slope/aspect: 5-45% / NORTHEAST TO NORTHWEST
Last observation: 1991-06-05 Size (acres): 4

Location:
CA. 8 MILES NNW OF DECKER. SPRING CREEK DRAINAGE (SPRING CREEK MINE), CA. 2 MILES SOUTHWEST OF HWY. 314.

Element occurrence data:
1991: THREE ADDITIONAL SUBPOPULATIONS LOCATED THIS YEAR, WITH > 50% IN FLOWER AND FROM 20-1000 INDIVIDUALS IN EACH SUBPOPULATION. 1989: CA. 12 PLANTS, RANGING IN SIZE FROM 1-25 CM. IN DIAMETER, MOST OLDER PLANTS BEARING FRUIT.

General site description:
ON FINE, SANDY CLAY LOAM SOIL, ABOVE A SANDSTONE OUTCROP, WITH ARTEMISIA TRIDENTATA, AGROPYRON SPICATUM, PHLOX HOODII, ASTRAGALUS GILVIFLORUS, OXYTROPIS SERICEA, AND ERIOGUNUM SPP.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
SURVEYED BY R. PRODGERS, K. FENTON, F. AMENDOLA AND G. HALLSTEN IN 1991. FIVE SITES TOTAL, CA. 1-2 MILES APART.

Information source: SCHASSBERGER, L. A. 1990. REPORT ON THE CONSERVATION STATUS OF ASTRAGALUS BARRII, A CANDIDATE THREATENED SPECIES. UNPUBLISHED REPORT TO THE U.S. FISH & WILDLIFE SERVICE, DENVER. MONTANA NATURAL HERITAGE PROGRAM, HELENA, MT. 85

PP.

Specimens: HALLSTEN, G. P. (2617). 1989. (PERSONAL COLLECTION).
FENTON, K. (S.N.). 1991. MONT.

Scientific Name: ASTRAGALUS BARRII
Common Name: BARR'S MILKVETCH

Global rank: G3 Forest Service status: SENSITIVE
State rank: S3 Federal Status:

Element occurrence code: PDFAB0F150.029
Element occurrence type:

Survey site name: SPRING CREEK
EO rank:
EO rank comments:

County: BIG HORN

USGS quadrangle: HALF MOON HILL

Township:	Range:	Section:	TRS comments:
008S	039E	13	N2; 14 NE4

Precision: S
Survey date: 1991-06-05 Elevation: 3920 -
First observation: 1989 Slope/aspect: 5-45% / NORTHEAST TO NORTHWEST
Last observation: 1991-06-05 Size (acres): 2

Location:
GO 14.7 MILES NORTH OF THE MT/WY BORDER ON STATE ROAD #314; SITE IS 0.75 MILE SOUTHWEST OF ROAD.

Element occurrence data:
FROM 20 TO 1000 INDIVIDUALS IN EACH SUBPOPULATION, WITH >50% IN FLOWER; SEED PRODUCTION, BUT NO SEEDLINGS OBSERVED.

General site description:
SUBPOPULATIONS GROWING ON BARE, DRY, FINE SOIL TO BARE SHALE, USUALLY ON THE MIDSLOPE TO CREST OF THE OUTCROP. ASSOCIATED SPECIES ARE ASTRAGALUS GILVIFLORUS, OXYTROPIS SERICEA, AND ERIOGONUM SPP.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

Information source: ROE, LISA SCHASSBERGER. [BOTANIST.] 531 SPENCER, HELENA, MONTANA 59601.

Specimens: FENTON, K. (S.N.). 1991. MONT.

Appendix B

Appendix B
References

References

Aaberg, Stephen and Bill Tallbull, 1993. Northern Cheyenne Ethnobotany of the Tongue River Reservoir Area. Aaberg Cultural Resource Consulting Service for Montana Department of Natural Resources and Conservation. Helena.

American Indian Religious Freedom Act of 1978. 42 U.S.C. 1996.

Ashland CAT, 1995. Ashland Community Action Team, Rosebud/Ashland Community Development Plan. February 15.

Barfield, B.J. and R.C. Warner, 1981. *Applied Hydrology and Sedimentology for Disturbed Areas.* Stillwater, Oklahoma: Oklahoma Technical Press.

Bax, N.J., 1987. "Effects of a tanker accident and an oil blowout in Bristol bay, Alaska, on returning adult sockeye salmon *(Oncorhynchus nerka):* a simulation study. *Marine Environmental Research* 22:177-203.

Beacham, J.L., L.W. Neal, B. Klatt, and B. Shah, 1993. Biological Diversity—An Emerging Environmental Issue. TAPPI Procedings: 1993 Environmental Conference. Atlanta, Georgia: Tappi Press.

Berry, John, 1998. Personal communication with Kiewit Mining Biologist. February.

Bomar, Bill, 1998. Personal communication with Sheridan 911 Ambulance Service. February 12.

Clancey, C.G., 1980. Vital statistics and instream flow requirements of fish in the MONTCO mine area of the Tongue River, Montana. Montana Department of Fish, Wildlife, and Parks Report.

Cordone, A.J. and D.W. Kelly, 1961. "The influences of inorganic sediment on the aquatic life of streams." California Fish and Game. 47:189-228.

CSI, 1990. *Draft Task Report (Task 2); Operating Plan for the Proposed Tongue River Railroad.* February.

Ellis, Stan, 1998. Personal communication with Office of Safety Assurance and Compliance, FRA. February 12.

Elser, A.A., R.C. McFarland, and D. Schwehr, 1977. "The effect of altered streamflow on fish of the Yellowstone and Tongue Rivers, Montana." Yellowstone Impact study, Ole West Regional Commission Report No. 8.

EPA, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.*

EPA, 1976. *Quality Criteria for Water.* Washington, D.C.: U.S. Environmental Protection Agency.

EPA, 1996. *Drinking Water Regulations and Health Advisories*. U.S. Environmental Protection Agency. EPA 822-B-96-002, October.

EPA, 1997. "Interim Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis." U.S. Environmental Protection Agency. September 30, 1997.

ESA Consultants, Inc., 1997. *Geologic/Geotechnical Investigations for the Southern Portion of the Proposed Tongue River Railroad*. Fort Collins, Colorado.

Fajen, O.F., 1962. "The influence of stream stability on homing behavior of two smallmouth bass populations." Trans. Am. Fish Soc. 91:346-349.

Farmer, Pat, 1998. Personal communication with Pat Farmer of Westech Western Technology and Engineering, Inc.

Fjell, Butch, 1998. Personal communication with Rosebud County Maintenance Foreman. March 3.

Flath, D., 1998. Personal communication with D. Flath with Montana Department of Fish, Wildlife and Parks.

FRA, 1997a. "Highway—Rail Crossing Accident/Incident and Inventory Bulletin No. 19. Calendar Year 1996.

FRA, 1997b. Safety Bulletin 97-2 re: Recommended Safety Practice to Stop Trains on Heavy Descending Grades. U.S. Department of Transportation. Federal Register Vol. 62, No. 39. February 27.

Frison, George C., 1978. *Prehistoric Hunters of the High Plains*. New York: Academic Press.

Gore, J.A., 1976. *Instream Flow Measurements of Benthic Macroinvertebrates in a Prairie River* [unpublished master's thesis]. Missoula, Montana: University of Montana.

Gustafson, 1998. Verified statement of Mike Gustafson, filed with Tongue River Railroad Company. Application to Construct and Operate Western Alignment in Surface Transportation Board. Finance Docket No. 30186 (Sub-No. 3).

Hadley, Dan, 1998. Verified statement of Dan Hadley, filed with Tongue River Railroad Company. Application to Construct and Operate Western Alignment in Surface Transportation Board. Finance Docket No. 30186 (Sub-No. 3).

Hadley, Dan, 1993. Memorandum to John Sanders (MDNRC) from Dan Hadley (Mission Engineering). May 14.

ICC, 1983. *Draft Environmental Impact Statement* [Finance Docket No. 30186]. Tongue River Railroad Company—Construction and Operation of a Line of Railroad in Custer, Rosebud, and Powder River Counties, Montana. July.

ICC, 1985. *Final Environmental Impact Statement* [Finance Docket No. 30186]. Tongue River Railroad Company—Construction and Operation of a Line of Railroad in Custer, Rosebud, and Powder River Counties, Montana. August.

ICC, 1992. *Draft Environmental Impact Statement* [Finance Docket No. 30186 (Sub-No. 2)]. Tongue River Railroad Company—Construction and Operation of an Additional Rail Line From Ashland to Decker, Montana. Washington, D.C.: Interstate Commerce Commission, Office of Economics, Section of Energy & Environment. July 17.

ICC, 1994. *Supplement to Draft Environmental Impact Statement* [Finance Docket No. 30186 (Sub. No. 2)]. Tongue River Railroad Company—Construction and Operation—of an additional Rail Line from Ashland to Decker, Montana. Washington, D.C.: Interstate Commerce Commission, Section of Environmental Analysis. March 17.

Iwamoto, R.N., E.O. Salo, M.A. Madej, R.L. McComas, and R.L. Rulifson, 1978. *Sediment and water quality: a review of the literature including a suggested approach for a water quality criterion.* Seattle, Washington: U.S. Environmental Protection Agency.

Knapp, S., 1977. *Birney-Decker Wildlife Study—Final Report.* Helena: Montana Department of Fish and Game.

Ladd, Patricia, 1998. TSS data received in response to e-mail request. Helena: U.S. Geological Survey. February 9.

Leilich, Robert, 1998. Verified statement of Robert Leilich, filed with Tongue River Railroad Company. Application to Construct and Operate Western Alignment in Surface Transportation Board. Finance Docket No. 30186 (Sub-No. 3).

Leopold, 1998. Personal communication between Rick Leopold (USDA Natural Resources Conservation Service, Bryan, Texas) and James Machin (R.J. Brandes Co., Austin, Texas). March 12.

Lewis, John, 1998. Personal communication with MDT. February 5.

Mahle, 1998. Personal communications with David Mahle (Director of Capacity Planning for BNSF). February.

Mahle, 1997. Verified statement of David Mahle, Director of Capacity Planning for BNSF. (Included in TRRC, 1997).

McDonald, Glen and Douglas M. Yadon, 1998. "Over the Top Concrete." Civil Engineering. January, p. 72-75.

McMahan, Ronald, 1998. Verified statement of Ronald McMahan, filed with Tongue River Railroad Company. Application to Construct and Operate Western Alignment in Surface Transportation Board. Finance Docket No. 30186 (Sub-No. 3).

MDFWP, 1993. Tongue River Reservoir Creel, July 1, 1992 through June 30, 1993. Montana Department of Fish, Wildlife and Parks Job Progress Report.

MDFWP, 1995. Montana Statewide Angling Pressure 1995. Montana Department of Fish, Wildlife and Parks.

MDNRC et al., 1996. *Tongue River Basin Project Final Environmental Impact Statement.* Helena, Montana: Montana Department of Natural Resources and Conservation, Northern Cheyenne Tribe, and the U.S. Bureau of Reclamation. March.

MDT, 1997. Railroad Administrative Rules of Montana. Montana Code Annotated 18.6301-315. June 30.

MNHP, 1998. Memorandum from the Montana Natural Heritage Program to Pat Farmer regarding Species of Concern for the three TRRC alternative routes. February 12.

Mission Engineering, 1998. Communications with Dan Hadley of Mission Engineering. March 8.

Montana Bureau of Mines and Geology, [no date]. Emmissible Limits for Inorganic Constituents in Water. Form 196. Water Quality Parameters and Their Significance.

Montana Coal Council, 1997. "Montana Coal 1997" [brochure].

Montana Department of Labor and Industry, 1996 (from Internet).

Montana Department of Labor and Statistics (as cited in ICC, 1992).

Montana Legislative Council Committee on Indian Affairs, 1995. "The Tribal Nations of Montana: a Handbook for Legislators."

MTA, 1998. Verified statement prepared by Dennis Burr of the Montana Taxpayers Association (Helena, Montana) filed with Tongue River Railroad Company. Application to Construct and Operate Western Alignment in STB Finance Docket No. 30186 (Sub-No. 3).

Mulloy, William T., 1996. *A Preliminary Historical Outline for the Northwestern Plains.* University of Wyoming Publications in Science, Archaeology. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Munther, G.L., 1970. "Movement and distribution of smallmouth bass in the Middle Snake River." *Trans. Am. Fish Soc.* 99:44-53.

National Historic Preservation Act of 1966, as amended through 1992. 16 U.S.C. 470 et seq.

NRCS, 1996. "Soil survey of Rosebud County Area and part of Big Horn County, Montana." United States Department of Agriculture, Natural Resources Conservation Service.

Newell, Alan S., 1980. *Patterns of the Past: A Brief History of the Ashland-Birney Area, Rosebud County, Montana.* Prepared for Montco, Inc. Missoula, Montana: Historical Research Associates.

Newell, Alan S., 1993. "Review of Additional Work and Revisions to the Tongue River Railroad Company's Proposed Alignment" [memorandum to Ms. Elaine Kaiser, Chief, Section of Energy and Environment of Interstate Commerce Commission from Alan S. Newell, Environmental Studies Manager of Tongue River Railroad Company]. May 24.

NRC, 1968. "Factors Influencing Safety at Highway/Rail Grade Crossings." National Cooperative Highway Research Program, Report Number 50.

Olson-Elliott and Associates, 1980a. *Vegetation Inventory and Analysis of the Montco Vegetation Study Area*. Helena, Montana.

Olson-Elliott and Associates, 1980b. *Terrestrial Wildlife Inventory of the Montco Mine Co. Project Area*. Final report prepared for Montco, Billings, Montana.

OTA, 1987. *Technologies to Maintain Biological Diversity*. Washington, D.C.: Office of Technology Assessment.

Parker, Patricia L. and Thomas F. King, 1995. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. National Register Bulletin 38. Washington, D.C.: U.S. Department of the Interior, National Park Service, Interagency Resources Division.

Parker, 1997. Verified statement of Larry Parker, Director of Asset Management for BNSF. (Included in TRRC, 1997).

Payne, G.F., 1973. *Vegetative Rangeland Types in Montana*. Bulletin 671. Bozeman: Agricultural Experiment Station.

Peterson, L., J. Ibanez, and J.L. Brownell, 1995. Cultural Resource Investigations of the Tongue River Dam Project, Big Horn County, Montana. Ethnoscience and Headwaters Cultural Resources for Montana Department of Natural Resources and Conservation. Helena.

Phillips, G., n.d. *Effects of fuel oil on fish and wildlife resources of Whitefish Lake, Montana.* Montana Department of Fish, Wildlife, and Parks.

Phillips, R., 1979. *Winter Distribution (1975-1978) of Pronghorn Antelope, Mule Deer and White-tailed Deer in the Decker subregion of Montana and Wyoming* [unpublished report]. Sheridan, Wyoming: Denver Wildlife Research Center.

Renard, Laflen, Foster, and McCool, 1994. "The Revised Universal Soil Loss Equation." In: *Soil Erosion Research Methods*. R. Lal, ed. Delray Beach, Florida: St. Lucie Press.

Riggs, Vick, 1998. Personal communication with Montana Department of Fish, Wildlife and Parks Fisheries biologist. March.

Sanders, John, 1998. Personal communication with MDNRC during site visit. January 29.

Seder, Dave, 1998. Personal communication with the Fire Chief of Big Horn County. February 17.

Skarr, P.D., D. Skarr, D. Flath, and L. Thompson, 1985. *Montana Bird Distribution.* Monograph No. 3, Vol. 44. Mt. Academy of Sciences.

STB, 1996a. *Final Environmental Impact Statement* [Finance Docket No. 30186 (Sub. No. 2)]. Tongue River Railroad Company—Construction and Operation—of an Additional Rail

Line From Ashland to Decker, Montana. Washington, D.C.: Surface Transportation Board, Section of Environmental Analysis. April 11.

STB, 1996b. *Decision* [Finance Docket No. 30186 (Sub-No. 2)]. Tongue River Railroad Company—Rail Construction and Operation—Ashland to Decker, Montana. Washington, D.C.: Surface Transportation Board. October 28.

Tallbull, Bill and Sherri Deaver, 1991. Potential Cultural Effects to the Northern Cheyenne from the Proposed Tongue River Railroad Extension. Washington, D.C.: Northern Cheyenne Cultural Commission and Ethnoscience for the Interstate Commerce Commission.

Thompson, L., 1982. *Distribution of Montana Amphibians, Reptiles, and Mammals*. Helena, Montana: Audubon Council.

TRRC, 1997. *Petition to Reopen*. Before the Surface Transportation Board [Finance Docket No. 30186 (Sub-No. 2)]. Tongue River Railroad Co.—Rail Construction and Operation—Ashland to Decker, Montana." Submitted to Vernon A. Williams, Secretary, Surface Transportation Board by Robert L. Calhoun, Attorney for the Tongue River Railroad Company.

TRRC, 1998. Request to Waive Six Month Notice Period. [Finance Docket No. 30186 (Sub-No. 3)] Tongue River Railroad Company - Construction and Operation of the Western Alignment. Submitted to Elaine Kaiser, Director, Section of Environmental Analysis, Surface Transportation Board by Betty Jo Christian, Attorney for Tongue River Railroad Company.

U.S. Department of Agriculture Forest Service (USDA-FS), 1978. *Ashland Plan: Draft Environmental Statement*. Missoula, Montana: USDA Forest Service, Northern Region.

USDI and USDA, 1992. *America's Biodiversity Strategy: Actions to Conserve Species and Habitats*. Washington, D.C.: U.S. Department of the Interior and U.S. Department of Agriculture.

U.S. Department of Interior, Bureau of Land Management (BLM), 1989. *Powder River I Regional EIS, Draft, Economic, Social and Cultural Supplement*. Map I, Powder River I, High Baseline Alternative.

Wanielista, M.P., et al., 1984. *Engineering and the Environment.*

Westech, 1982-89. Montco terrestrial wildlife monitoring reports [technical reports]. Helena, Montana: Western Technology and Engineering, Inc.

Westech, 1995. *Biological Assessment for Endangered or Threatened Species, Tongue River Railroad Company Additional Rail Line from Ashland to Decker, Montana.* Western Technology and Engineering, Inc. and Historical Research Associates, Inc. June.

Westech, 1998. Disturbed acreage determined in meeting with Dan Hadley of Mission Engineering and Pat Farmer with Westech conducted February 27.

Western Water Consultants, 1994. *Jurisdictional Wetlands Delineation for the Proposed Tongue River Railroad Extension from Decker to Ashland, Montana.* Western Water Consultants, Inc. November 10.

Wetzel, Wayne, 1998. Memorandum to Doug Day (Wesco) from Wayne Wetzel (Special Projects Coordinator of MDNRC). February 12.

Yoakum, J., 1980. *Habitat management guides for the American pronghorn antelope.* Denver, Colorado: U.S. Department of the Interior, Bureau of Land Management, Denver Service Center.

Appendix C

Appendix C
List of Preparers

LIST OF PREPARERS

Mark Alsup of Radian International LLC had primary responsibility for the map production in this environmental report (ER). He is a computer assisted drawing (CAD) professional with 5 years of experience at Radian.

Jeff Beacham of Radian was responsible for the terrestrial and aquatic biological sections of this ER. He has a Ph.D. in biology with a specialization in ecology. He has 18 years of experience in conducting biological field work, wetlands delineation, and threatened and endangered species investigations.

Bob Davis of Radian was team leader and technical director for this ER. He also prepared the socioeconomic, noise, and visual impact sections. Mr. Davis has more than 20 years of experience in leading multimedia, multidisciplinary environmental assessments. His academic degrees are a B.A. in geography and an M.A. in communications.

Doug Day of Wesco Resources, Inc. was the primary representative of TRRC for this ER and provided detailed project information and background. Mr. Day currently is Project Manager for the Tongue River Railroad Company, with responsibility for overall project management, including administrative, regulatory and environmental compliance activity, regulatory approvals, right-of-way acquisition, and engineering and design programs. He has 26 years of experience in administrative and management programs with private industry and state government. His academic degree is a B.A. in business administration and economics.

Pat Farmer of Western Technology and Engineering, Inc. assisted in the biological analyses and habitat classifications for this ER.

Weber Greiser of Historical Research Associates prepared the cultural resource section and sections dealing with Native Americans. Mr. Greiser has an M.A. in anthropology and more than 23 years of field experience in archaeology. He has directed many cultural resource projects in the western United States.

Ardeth Hadley of Radian was the principal typist for the preparation of this ER.

Daniel R. Hadley of Mission Engineering has been under contract to TRRC for much of the project's history. He provided all of the engineering design and much of the cost and construction-related data for this ER. Mr. Hadley is a Licensed Professional Engineer with 22 years of experience in transportation and mining projects. His academic degree is an M.S.C.E., and he has been President of Mission Engineering since 1989.

James L. Machin of R. J. Brandes Company prepared the soil erosion and sedimentation portions of this ER. He has 25 years of experience in water resources and related environmental areas, including NEPA, and is a registered professional engineer. His academic degrees are a B.S. in engineering and an M.S. in environmental and water resources engineering.

Mary Jane McGarity of Radian prepared the air quality, land use, soils, and geology sections. She is an environmental engineer with 16 years of experience and represents Radian regionally, with an office in Billings.

Russ Rudolph of Radian was Radian's project manager for this ER. He prepared the transportation, energy, and safety sections. He has more than 30 years of experience in environmental engineering, industrial hygiene, occupational health, and environmental analysis, including four as the U.S. Air Force NEPA program manager.

Gretchen Welshofer of Radian prepared the hydrological sections and coordinated the preparation of several sections and graphics. She has an M.S. in environmental science and seven years of experience.

Stacy Lee Weichert of Radian developed the soil loss estimates related to erosion and assisted in preparing the soils section. She is a civil engineer with eight years of experience in engineering design and site investigations.

Paul N. Williams of Radian was technical editor for this ER. He has thirteen years of experience in technical communications, including projects involving NEPA and CEQA (California Environmental Quality Act). In addition, he has several years of experience in field work and laboratory management, and his academic degree is a B.S. in chemistry.

Appendix D

Appendix D
Surface Water Analyses

Appendix D-1:	**Hydrology Report**
Appendix D-2:	**Soil Erosion Calculations**
Appendix D-3:	**Sedimentation Calculations**

Appendix D-1
Hydrology Report

WWC ENGINEERING
A DIVISION OF WESTERN WATER CONSULTANTS, INC.

Sheridan
1949 Sugarland Drive, Suite 134
Sheridan, Wyoming 82801
(307) 672-0761
FAX: (307) 674-4265

Casper
701 Antler Drive, Suite 233
Casper, Wyoming 82601
(307) 473-2707
FAX: (307) 237-0828

Laramie
611 Skyline Road, P.O. Box 4128
Laramie, Wyoming 82071
(307) 742-0031
FAX: (307) 721-2913

May 7, 1993

Mr. John Sanders, P.E.
Montana Department of Natural Resources and Conservation
Lee Metcalf Building
1520 East 6th Avenue
Helena, MT 59620-2301

WWC Job No: 043.1

RE: Part 1, Supplementary Hydrologic Analysis, Tongue River Railroad

Dear John:

We are writing to provide you with the results of Part 1 of a supplementary hydrologic analysis of an approximately 12-mile reach of the Tongue River located immediately downstream of Tongue River Dam. This study was completed in accordance with discussions between WWC and DNRC on April 13, 1993 and with the authorization of Tongue River Railroad sponsors.

Purposes of the Study

The purposes of this study were: 1) to provide a preliminary assessment of the impacts on six inhabited or habitable structures in the Tongue River Valley resulting from the proposed construction of five Tongue River Railroad bridges, and 2) to determine whether any of the five proposed railroad bridges may be overtopped during the floods considered.

Study Methodology

This study was conducted using the HEC-1 computer program and revised versions of HEC-1 input files developed by WWC in 1990 to assess the impacts of the five proposed railroad bridges on flooding resulting from a breach of Tongue River Dam. Input file revisions were based on information provided by DNRC and map data from the Tongue River Dam and Spring Gulch, Montana USGS quads. Significant revisions to the 1990 HEC-1 files included:

--Use of reservoir inflow hydrographs based on percentages of the Tongue River Reservoir Probable Maximum Flood (PMF) hydrograph developed for DNRC by Harza Engineering Company,

--Use of Tongue River Dam spillway discharge rating data for the proposed 250-foot wide labyrinth spillway as shown on Figure 3-14 of the Decker Coal Company Mine Mitigation Study,

--Addition of six new cross sections (Lee, Musgrave, Thompson, No Name No. 1, No Name No. 2, and Hosford) at the approximate locations of homesites in the Tongue River Valley (All HEC-1 cross sections are shown on enclosed Maps 1 and 2), and

--Modification of the TR-R4 railroad bridge cross section. This modification involved shifting the approximately 500-foot wide opening between bridge abutments to the west of its location in the 1990 HEC-1 cross section in order to decrease the impact of this structure on channel conveyance. This minor design change has been discussed with and approved by the railroad sponsors.

As directed by DNRC, floods producing peak spillway discharges of approximately 60,000, 100,000, and 120,000 cfs were each analyzed twice, once with and once without the proposed railroad bridges in place. Since the proposed labyrinth spillway will be theoretically capable of safely passing these floods, no breach of the dam was considered. Using the same spring flood return period graph from which major flood return periods were estimated for the Decker Coal Company Mine Mitigation Study, the floods causing these spillway discharges would have return periods of approximately 2,200 years, 5,000 years, and 10,000 years, respectively. The 100,000 cfs flood is the design flood for the proposed 250-foot wide Tongue River Dam labyrinth spillway. The major 1978 flood which threatened the existing Tongue River Dam spillway had a peak inflow rate of about 17,500 cfs and produced a peak spillway discharge of approximately 6,800 cfs, which helps to place into perspective these much larger flows used in this analysis.

If, during analysis of the 60,000 cfs flood, the proposed bridges were shown to significantly impact the homesites, smaller floods were to have been analyzed to establish the peak flow rate below which the presence of the bridges would not impact the homesites. Completion of this component of the original scope of work was not considered necessary, as described below.

Results of the Study

The results of this study are illustrated on the accompanying drawing, HEC-1 Analysis Downstream of Tongue River Dam, dated May 3, 1993. This drawing shows the Tongue River routing reach profile, HEC-1 cross section locations, approximate existing homesite locations, maximum water surface elevations (MAX WSEL) at HEC-1 cross sections computed during the study, and a tabular summary of maximum water surface elevations at the railroad bridge cross sections.

Conclusions

This HEC-1 analysis indicates that, during floods of the magnitude under consideration:

1. No homesites should be impacted solely as a result of the construction of the proposed railroad bridges. In other words, at the flow rates investigated, all five homesites located upstream of the most downstream railroad bridge (cross section TR-R4) are inundated without the railroad.

2. The extent of inundation of homesites should not be appreciably increased as a result of construction of the railroad bridges. The maximum effect of the bridges is seen at cross section SG-1AR, where a spillway peak discharge of 120,000 cfs would result in an increase in water surface elevation of only 6 feet. At a peak spillway discharge of 60,000 cfs, the computed effect of the bridge at this cross section would be an increase of only 2 feet.

3. Increases in maximum water surface elevations during 60,000 cfs or smaller floods due to construction of the proposed railroad bridges should be negligible.

4. The crest elevations of the railroad bridges are well above the computed water surface elevations at all discharge rates analyzed, indicating that the bridges would not be overtopped and separate breach analyses of the railroad fills should not be necessary. Therefore, continuing the flood analysis downstream from the bridges is not necessary.

Based on the results of this Part 1 analysis, it is our opinion that the railroad bridges would have a minimal impact on flood levels at the six homesites studied. At 100-year flood levels and below, the effects of the bridges would be insignificant. Based on the results of the Part 1 analysis, we feel that Part 2 (HEC-2 water-surface profile and railroad bridge breach analyses) is not warranted. Please advise if you concur with this opinion.

Sincerely,

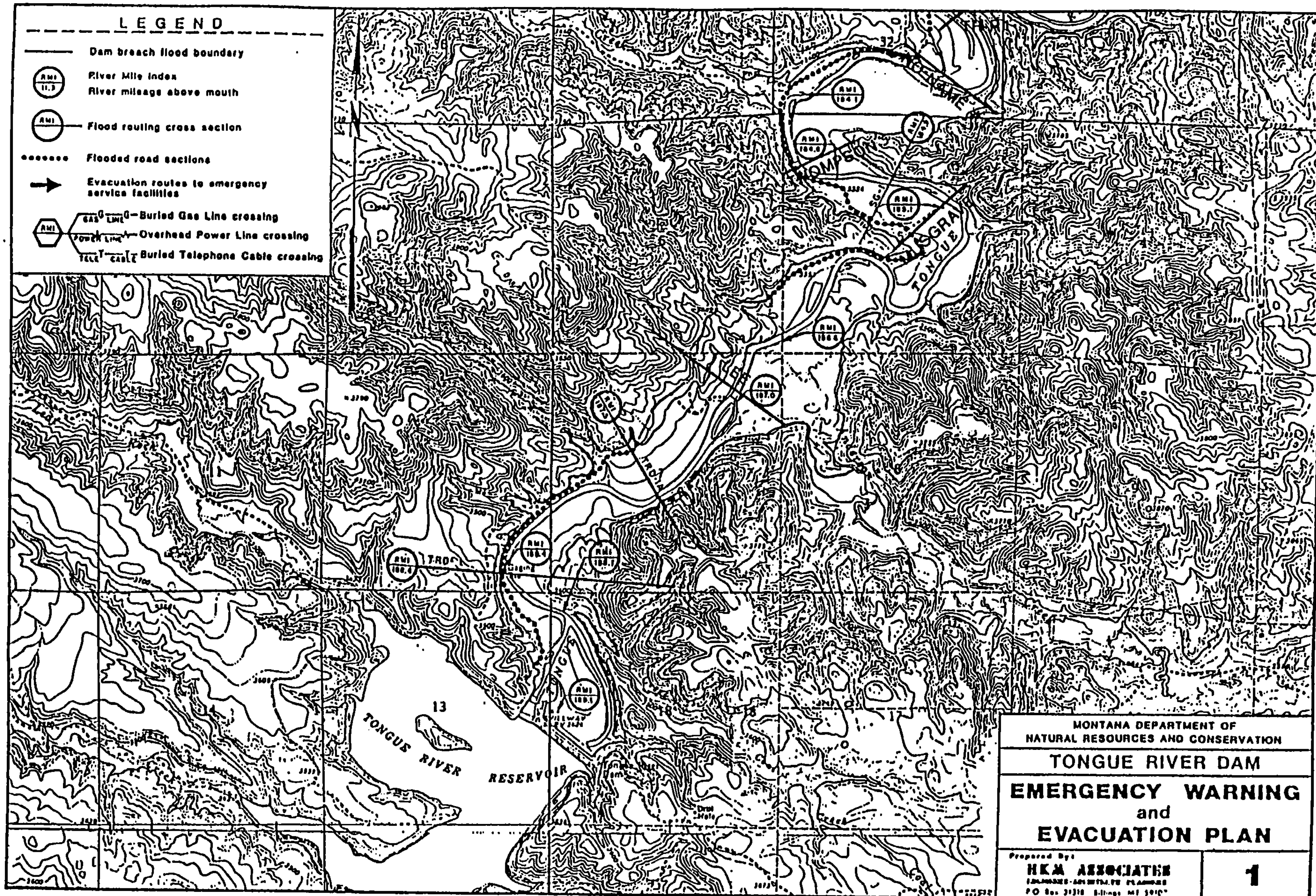
John Galbreath

John Galbreath
Design Engineer

JG:hjp

Enclosures: as noted
xc w/enclosures: Mr. Doug Day, WESCO Resources
Mr. Alan Newell, HRA

WWC



REVISED BY WESTERN WATER CONSULTANTS MAY 1993

FEB-17-98 TUE 10:24 P.06

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

MARC RACICOT, GOVERNOR

LEE METCALF BUILDING
1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699
TELEFAX NUMBER (406) 444-6721

PO BOX 202301
HELENA, MONTANA 59620-2301

July 2, 1993

Mr. John Galbreath
WWC Engineering
1949 Sugarland Dr., Suite 134
Sheridan, WY 82801

Dear John:

We have reviewed your report entitled Part 1, Supplementary Hydrologic Analysis, Tongue River Railroad. The report is clear, concise, and reflects our understanding of the tasks you were to perform pursuant to our discussion on April 13, 1993. Although we are surprised that the proposed railroad bridges would have so little effect on flooding at the homesites in question, we concur with your conclusion that Part 2 of the analysis is not warranted.

Thank you for your professional work on this project. If you have any questions, please feel free to call me or John Sanders.

Sincerely,

Glen McDonald

Glen McDonald, P.E., Chief
State Water Projects Bureau

GM:JS:ms

Appendix D-2
Soil Erosion Calculations

Gross Soil Erosion Calculations

Calculations were performed for three possible alignments of the Tongue River Railroad to estimate the annual soil loss using the Revised Universal Soil Loss Equation (RUSLE). See Section 4.7 for the presentation of the results.

The RUSLE equation is as follows:

$$\text{Gross Soil Loss (A)} = R \times K \times LS \times C \times P$$

where:

R = Rainfall/Runoff Factor

Using isoerodent map of Western United States, find site location to estimate R. Map is revised for RUSLE. From Attachment 1, R = 18 (for all three alignments).

K = Soil Erodibility Factor

From 1983 Draft EIS, K for all three alignments used a K factor of 0.32. Attachment 2 represents mid-range K values for area surficial soils. Fills will use significant amounts of rock and less erosive material (e.g., clinker) from project cut sections. An erodible soil with a typical K value of 0.32 would be reduced to approximately 0.24 with the addition of 50 percent rock fragments (Leopold, 1998). Also, deeper soils tend to have lower K (NRCS, 1996). Use K = 0.20 for all alignments.

LS = Slope/Length Factor

Use estimated slope gradient (2:1 for all) and average slope length (see Attachment 3) for all alignments. Enter table for newly constructed slopes to interpret LS factor. Table uses revised method to estimate LS (Attachment 3).

Western Alignment:	S	=	50%; avg L	=	103; LS	=	9.73
Four Mile Creek Alternative:	S	=	50%; avg L	=	71; LS	=	6.87
Original Preferred Alignment:	S	=	50%; avg L	=	85; LS	=	7.97

C = Cover Factor

For worst case, assume no ground cover. C = 1.0 for all three alignments.

P = Management/Practice Factor

Assume no contouring/furrowing of slope soil. P = 1.0 for all three alignments.

The gross soil loss calculation for each alignment is presented in Table D2-1, using

$$A = R \times K \times LS \times C \times P \text{ (tons/ac/yr)}$$

Table D2-1. Gross Soil Erosion Calculations for Three Proposed Alignments

	RUSLE Factors					RUSLE Results		
Alignment	**R**	**K**	**LS**	**C**	**P**	**Gross Soil Loss (A) (t/ac/yr)**	**Affected Area (ac)**	**Soil Loss (tons/yr)**
Western	18	0.20	9.73	1	1	35.05	364	12,750
Four Mile Creek	18	0.20	6.87	1	1	24.73	456	11,278
Original Preferred	18	0.20	7.97	1	1	28.69	334	9,583

R-FACTOR

The rainfall-runoff erosivity term in RUSLE is calculated as the product of storm kinetic energy times the maximum 30-minute storm depth and summed for all storms in a year. The R-factor represents the input that drives the sheet and rill erosion processes. Thus differences in R values represent differences in erosivity of the climate. Of the RUSLE factors, R is the one most exactly computed from input data.

In the western U.S. (Figures 5.1, 5.2, and 5.3), new R values have been calculated using over 1000 point values, a significant addition to the information available in *Agriculture Handbook 537* (*6*). Whereas the old R isoerodent maps for the west had maximum point values of about 50 units (hundreds of foot · tonforce · inch/acre · hour · year), new values are as large as 350 units along the Pacific coastal areas (Figure 5.3). Some changes are also involved in the eastern states (east of the 105th meridian) (Figure 5.4). Another change in the R-factor is to reduce R values where flat slopes occur in regions of long intense rainstorms. Ponded water on the soil reduces the erosivity of the rain. Finally, an R equivalent approach is being used in the frozen soil areas of the Pacific Northwest to reflect the combined effect of rain or snowmelt on frozen or partly-thawed soil.

Part of the R-factor calculation involves a seasonal distribution to permit weighting of the soil erodibility value, K, and the cover-management factor, C. To facilitate these calculations, climate data files have been developed (called a city code) for climatically homogeneous areas. These computer files include information such as the frost-free duration in days, monthly precipitation and temperature, and 15-day distributions of R. Typical values are included in the computer program for at least one station in each of 120 climatic regions (Figure 5.5) of the contiguous 48 states plus numerous stations in Hawaii. The computer program includes a provision for addition of new climate data sets using data provided by the user. This also allows easy use of RUSLE in other regions of the world.

K-FACTOR

The K-factor is a measure of the inherent erodibility of a given soil under the standard condition of the unit USLE plot maintained in continuous fallow. Values for K typically range from about 0.10 to 0.45 (U.S. customary units), with high-sand and high-clay content soils having the lower values and high-silt content soils having the higher values. Users have little difficulty choosing a K-factor value because the Soil Conservation Service (SCS) has identified K values for all major soil mapping units

ATTACHMENT 1 Sheet 3/5

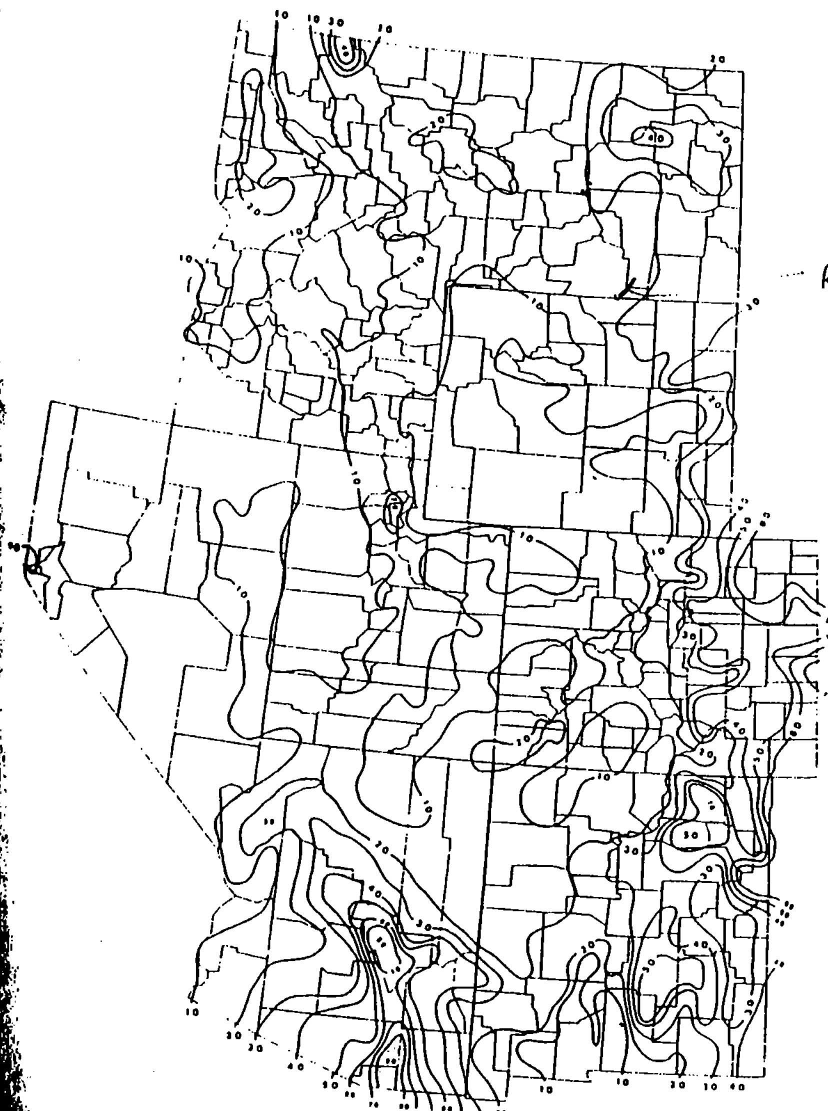


Figure 5.1 Western U.S. isoerodent map.

From Soil Erosion Research Methods (R. Lal, 1994)

Table 5.4 Values for topographic factor, LS, for high ratio of rill to interrill erosion, such as for freshly prepared construction and other highly disturbed soil conditions with little or no cover (not applicable to thawing soil).

	Slope length in feet																
Slope	≤3	6	9	12	15	25	50	75	100	150	200	250	300	400	600	800	1000
%																	
0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
0.5	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.11	0.12	0.12	0.13
1.0	0.09	0.09	0.09	0.09	0.09	0.10	0.13	0.14	0.15	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.27
2.0	0.13	0.13	0.13	0.13	0.13	0.16	0.21	0.25	0.28	0.33	0.37	0.40	0.43	0.48	0.56	0.63	0.69
3.0	0.17	0.17	0.17	0.17	0.17	0.21	0.30	0.36	0.41	0.50	0.57	0.64	0.69	0.80	0.96	1.10	1.23
4.0	0.20	0.20	0.20	0.20	0.20	0.26	0.38	0.47	0.55	0.68	0.79	0.89	0.98	1.14	1.42	1.65	1.86
5.0	0.23	0.23	0.23	0.23	0.23	0.31	0.46	0.58	0.68	0.86	1.02	1.16	1.28	1.51	1.91	2.25	2.55
6.0	0.26	0.26	0.26	0.26	0.26	0.36	0.54	0.69	0.82	1.05	1.25	1.43	1.60	1.90	2.43	2.89	3.30
8.0	0.32	0.32	0.32	0.32	0.32	0.45	0.70	0.91	1.10	1.43	1.72	1.99	2.24	2.70	3.52	4.24	4.91
10.0	0.35	0.37	0.38	0.39	0.40	0.57	0.91	1.20	1.46	1.92	2.34	2.72	3.09	3.75	4.95	6.03	7.02
12.0	0.36	0.41	0.45	0.47	0.49	0.71	1.15	1.54	1.88	2.51	3.07	3.60	4.09	5.01	6.67	8.17	9.57
14.0	0.38	0.45	0.51	0.55	0.58	0.85	1.40	1.87	2.31	3.09	3.81	4.48	5.11	6.30	8.45	10.40	12.23
16.0	0.39	0.49	0.56	0.62	0.67	0.98	1.64	2.21	2.73	3.68	4.56	5.37	6.15	7.60	10.26	12.69	14.96
20.0	0.41	0.56	0.67	0.76	0.84	1.24	2.10	2.86	3.57	4.85	6.04	7.16	8.23	10.24	13.94	17.35	20.57
25.0	0.45	0.64	0.80	0.93	1.04	1.56	2.67	3.67	4.59	6.30	7.88	9.38	10.81	13.53	18.57	23.24	27.66
30.0	0.48	0.72	0.91	1.08	1.24	1.86	3.22	4.44	5.58	7.70	9.67	11.55	13.35	16.77	23.14	29.07	34.71
40.0	0.53	0.85	1.13	1.37	1.59	2.41	4.24	5.89	7.44	10.35	13.07	15.67	18.17	22.95	31.89	40.29	48.29
50.0	0.58	0.97	1.31	1.62	1.91	2.91	5.16	7.20	9.13	12.75	16.16	19.42	22.57	28.60	39.95	50.63	60.84
60.0	0.63	1.07	1.47	1.84	2.19	3.36	5.97	8.37	10.63	14.89	18.92	22.78	26.51	33.67	47.18	59.93	72.15

interpolate LS from slope length

Table 5.5 Values for topographic factor, LS, for thawing soils where most of the erosion is caused by surface flow.

	Slope length in feet												
Slope	15	25	50	75	100	150	200	250	300	400	600	800	1000
%													
0.2	0.02	0.03	0.04	0.05	0.06	0.07	0.09	0.10	0.10	0.12	0.15	0.17	0.19
0.5	0.04	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.17	0.20	0.24	0.28	0.31
1.0	0.06	0.08	0.11	0.14	0.16	0.20	0.23	0.26	0.28	0.32	0.40	0.46	0.51
2.0	0.11	0.14	0.20	0.25	0.29	0.35	0.41	0.46	0.50	0.58	0.71	0.82	0.91
3.0	0.16	0.21	0.29	0.36	0.42	0.51	0.59	0.66	0.72	0.83	1.02	1.17	1.31
4.0	0.21	0.27	0.38	0.47	0.54	0.66	0.77	0.86	0.94	1.08	1.33	1.53	1.71
5.0	0.26	0.33	0.47	0.58	0.67	0.82	0.94	1.06	1.16	1.34	1.64	1.89	2.11
6.0	0.31	0.40	0.56	0.69	0.79	0.97	1.12	1.26	1.38	1.59	1.95	2.25	2.51
8.0	0.41	0.52	0.74	0.91	1.05	1.28	1.48	1.65	1.81	2.09	2.56	2.96	3.31
10.0	0.48	0.62	0.88	1.08	1.25	1.53	1.77	1.98	2.16	2.50	3.06	3.54	3.95
12.0	0.54	0.70	0.98	1.21	1.39	1.71	1.97	2.20	2.41	2.78	3.41	3.94	4.40
14.0	0.59	0.76	1.08	1.32	1.53	1.87	2.16	2.41	2.64	3.05	3.74	4.31	4.82
16.0	0.64	0.82	1.17	1.43	1.65	2.02	2.33	2.61	2.86	3.30	4.04	4.67	5.22
20.0	0.73	0.94	1.33	1.63	1.88	2.30	2.66	2.97	3.25	3.76	4.60	5.31	5.94
25.0	0.83	1.07	1.51	1.85	2.13	2.61	3.02	3.37	3.69	4.27	5.23	6.03	6.75
30.0	0.91	1.18	1.67	2.05	2.36	2.89	3.34	3.73	4.09	4.72	5.78	6.68	7.47
40.0	1.07	1.38	1.95	2.39	2.75	3.37	3.90	4.36	4.77	5.51	6.75	7.79	8.71
50.0	1.19	1.54	2.18	2.67	3.08	3.77	4.35	4.87	5.33	6.16	7.54	8.71	9.74
60.0	1.30	1.67	2.37	2.90	3.35	4.10	4.74	5.30	5.80	6.70	8.20	9.47	10.59

From Soil Erosion Research Methods

(R. Lal, 1994)

ATTACHMENT 3 Sheet 5/5

and applying those figures to data regarding the ability of specific soils along the route to tolerate soil loss. Soil loss is determined by using the U.S. Department of Agriculture's (USDA) Universal Soil Loss Equation (USLE). Gross erosion estimates are then compared with maximum soil loss tolerance figures developed by the USDA.[2] The USLE computes the average annual soil loss in tons per acre by multiplying together a variety of factors. An explanation of these factors and the values assigned to each as used in the analysis are presented below.

"R", the rainfall factor in the USLE, may be determined by the following relationship:[3]

$$R = EI/100$$

where $\underline{E}$ = storm energy in foot-tons per acre-inch
$\underline{I}$ = maximum 30 minute rainfall intensity in inches per hour

Western R values has been revised for RUSLE

Several publications are available showing mean annual R factors for the state of Montana.[4] Reported values range from an R factor of 20 to 30 for the area to be affected by the TRRC railroad. A mid-range value of 25 was used for computations described herein.

The K factor, or soil erodibility factor, applies to the capacity of a particular soil to erode under fallow conditions. The K factor has been estimated for numerous soils on the basis of percent silt and fine sands, percent sand, percent organic material, soil structure, and permeability. Nearly all soils will fall within a range of from 0.1 to 0.7.[5] Sandy soils usually have a low K factor (0.02 to 0.05), very fine sands and silts have a high K factor ranging from 0.3 to 0.7, and the K factor is low for clay soils (0.1 to 0.3). Soil conditions are somewhat variable in the vicinity of the proposed rail line, but are dominated by those with ~~a mod~~erate erodibility (0.25 to 0.35). Therefore, a uniform K factor of 0.32 was employed in the analysis.

K Factor

The cover and management factor (C) in the USLE measures the combined effect of all the inter-related cover and management variables. The most critical time for soil erosion is during the construction period, before the construction area is stabilized with vegetation. During this period the C factor is taken to be 1.0, or the maximum value.

OK

The support practice factor (P) in the USLE is used to show the effects of specific soil loss prevention practices. These support practices, which are generally used in agricultural applications, include contouring and similar measures. Since these agricultural practices generally are not employed in railroad construction, the P factor was taken as 1.0 (maximum value) for this analysis.

OK

The length and steepness of the land slope have major impacts on the rate of soil erosion during a rainfall event. For field application the slope length (L) and slope steepness (S) have been combined

From Draft EIS
ICC, July 83

Appendix D-3
Sedimentation Calculations

Estimate of Sediment Delivery Ratios for TRRC Alternatives

The Universal Soil Loss Equation is a useful tool for predicting the gross amount of soil lost from sheet and rill erosion (does not include gully and channel erosion) assuming that no deposition occurs. Between the point of generation and the downstream point of interest, soil will have many opportunities to be deposited, reducing the sediment yield accordingly. To quantify the amount of deposition occurring, a sediment delivery ratio (SDR) has been defined as:

$$SDR = Y/A$$

where:

Y is the sediment yield from a watershed and A is the gross erosion occurring on the watershed.

The estimation of the SDR for a watershed without extensive data collection is somewhat problematic. There are many factors which can influence this that are difficult if not impossible to quantify. SDRs have been estimated by several different methods. The most common was developed by the U.S. Soil Conservation Service (SCS, now known as the Natural Resource Conservation Service) and is expressed as a function of the drainage area of a stream (Barfield and Warner, 1981). The smaller the drainage area, the higher the SDR. Over a range of 0.01 sq. mi. to 1000 sq. mi., the SDR ranges from about 70 percent to about 5 percent. As expected, there is considerable scatter in the data used to develop that relationship.

The alignments being analyzed represent disturbances and sediment delivery in selected locations, as opposed to sediment delivery from a large drainage basin. The drainage areas between the locations of the disturbances and the Tongue River are several orders of magnitude smaller than the drainage area of the entire basin. Consequently, the SDRs for the alternatives would be expected to be significantly higher than that for the entire basin.

Western Alignment

For the Western Alignment, the distance from the alignment to the river typically ranges from about 1000 ft to one mile. Drainage areas between the fills and the river are on the order of 0.1 to 1.0 sq. mi. Based on the SCS relationship, SDR would range from 30 to 45 percent. An average value of 37 percent was selected.

Sediment delivery to the river: 12,750 × (0.37) = 4718 tons/yr.

Original Preferred Alignment

For the Original Preferred Alignment, the alignment ranges from a few hundred feet to about 4000 ft from the river. Drainage areas between the fills and the river are on the order of 0.05 to 0.5 sq. mi. SDR would range from 35 to 50 percent. An average of 42 percent was selected.

Sediment delivery to the river: 9583 × (0.42) = 4025 tons/yr.

Four Mile Creek Alternative

For the Four Mile Creek Alternative, there are several different reaches along the 29-mile route, therefore a weighted average SDR was calculated. The first 8 miles follows the Original Preferred Alignment along the river. The average value of 42 percent was selected for this reach as described above. The next mile includes the Tongue River crossing, where a large amount of fill is required, to the point where the route intersects the Western Alignment. The same value of 42 percent was selected for this reach. The next 3 miles are on a relatively steep grade over dissected terrain, requiring a disproportionate amount of cut and fill. The drainage area between this reach and the river is approximately 4 sq. mi., with a corresponding SDR of 22. The remaining 17 miles of the route deviate significantly away from the river. The drainage area of this portion of the route is roughly 50 sq. mi., with a corresponding SDR of 11 percent.

The weighting factors used were calculated as follows:

- Original Preferred: 8mi/29mi = 28 percent of route. Use average weighting of 28 percent.
- River crossing: 1/29 = 3 percent of route. However, approximately 10 percent of the fill will be used in this reach (1.08 MM cu. yd./10.36 MM cu. yd.). Use weighting of 10 percent.
- Steep grade: 3/29 = 10 percent of route. More cut and fill will be required. Use weighting of 20 percent.
- Remainder: 17/29 = 59 percent of route. Less cut and fill will be required. Use weighting of 42 percent (balance remaining).

Therefore, a weighted average SDR is calculated as follows: 42(0.28) + 42(0.10) + 22(0.20) + 11(0.42) = 25.

Sediment delivery to the river: 11,278 × (0.25) = 2820 tons/yr.

Estimate of Increase in Total Suspended Sediment (TSS) in Tongue River

The mean annual discharge of the Tongue River below Tongue River Dam is 321,000 acre-feet. To convert tons of sediment per year into mg/L of TSS in the river:

$$\frac{\text{X tons sediment}}{321{,}000\ \text{a-f}} \times \frac{\text{a-f}}{43{,}560\ \text{ft}^3} \times \frac{\text{ft}^3}{7.481\ \text{gal}} \times \frac{\text{gal}}{3.785\ \text{L}} \times \frac{2000\ \text{lb}}{\text{ton}} \times \frac{453{,}592\ \text{mg}}{\text{lb}} = \text{X} \times (0.00229)$$

Western: 4718 × (0.00229) = 11 mg/L
Four Mile: 2820 × (0.00229) = 6 mg/L
Original Preferred: 4025 × (0.00229) = 9 mg/L

Total estimated sediment delivered to the Tongue River and increase in TSS during the construction period are summarized for the three alternatives as follows:

Alignment	Estimated Soil Loss (tons/yr)	Sediment Delivery Ratio	Increase in Sediment Load to River (tons/yr)	Increase in TSS Concentrations (mg/L)
Western	12,750	0.37	4718	11
Four Mile Creek	11,278	0.25	2820	6
Original Preferred	9,583	0.42	4025	9

Reference: Barfield, B.J. and R.C. Warner, 1981. *Applied Hydrology and Sedimentology for Disturbed Areas*, Oklahoma Technical Press, Stillwater, OK.

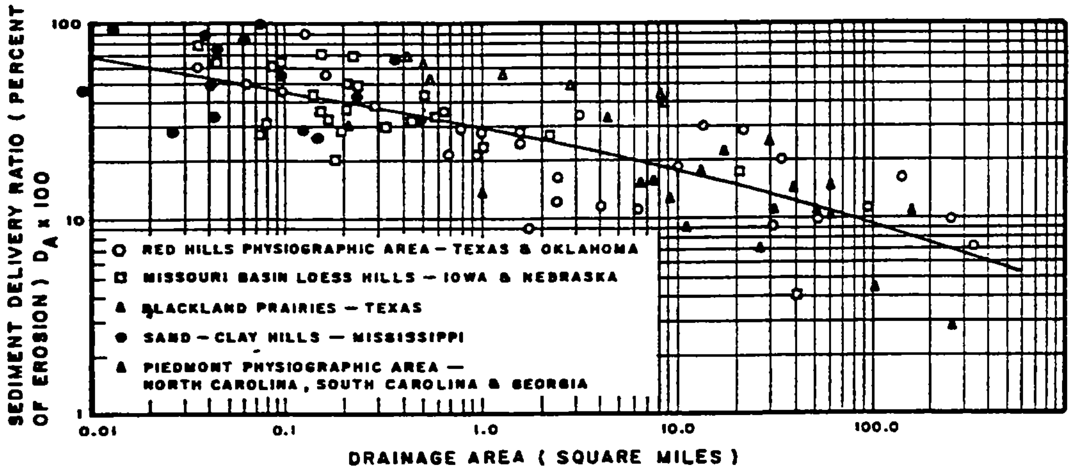


Figure 5.22. Sediment-delivery ratio versus size of drainage area. Where possible, site specific data should be used. (Boyce, 1975)

eroded from a watershed can be transported through the channel system. A well channelized watershed will transport most eroded material out of the watershed. A poorly channelized watershed will transport the sediment slowly, leaving many opportunities for deposition. One measure of channelization is known as the Relief-Length Ratio. The relief-length ratio is calculated as the ratio

$$\left[\frac{\text{elevation difference between watershed divide at the main stem and the reservoir site}}{\text{length of flow path along the main stem}}\right]$$

An example of the effects of relief-length ratio on the sediment delivery ratio is shown in Figure 5.23 for the Red Hills area of Oklahoma and Texas (Renfro, 1975). It should be applied with caution to other areas. The shape of the curve should be similar for other areas.

Forest Service Sediment Delivery Index Model

The Forest Service (1980) has developed a methodology to predict the sediment delivery ratio from a disturbed site to a stream channel. This method extends the sediment delivery ratio procedure from an annual estimate to a storm basis. A sediment delivery ratio can now be estimated for a design storm. Since the delivery ratio estimated for a design storm will be greater than that of smaller storms occurring throughout the year, it can be regarded as an approximate

(Barfield & Warner, 1981)

Appendix E

Appendix E
EPA's Design Specifications for River Bank Stabilization

[Reproduced as it appears, including page numbers, in the Final Environmental Impact Statement]

F.D. 30186 (SUB NO. 2)

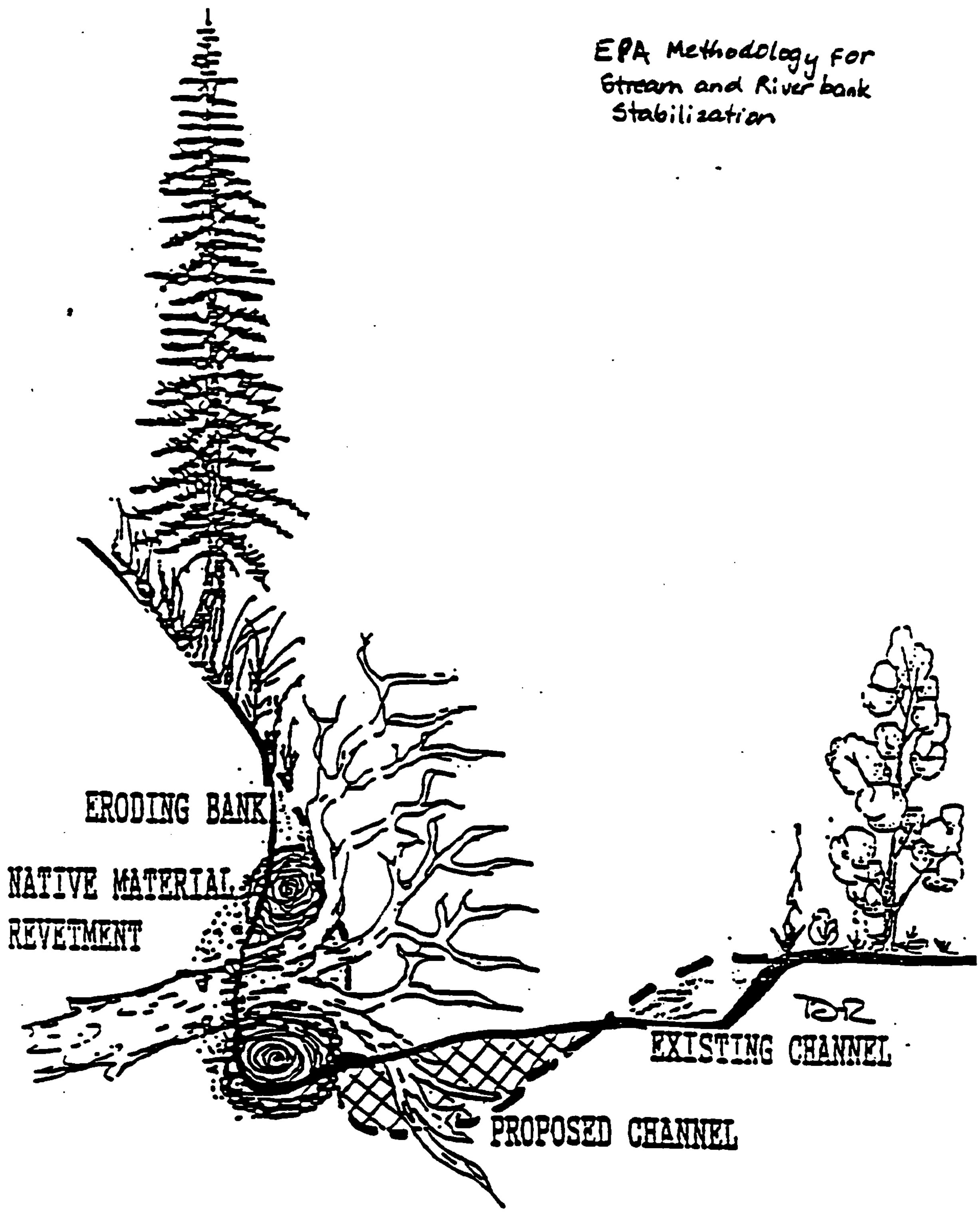
TONGUE RIVER RAILROAD COMPANY'S PROPOSED EXTENSION BETWEEN ASHLAND AND DECKER, MT

FINAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX F

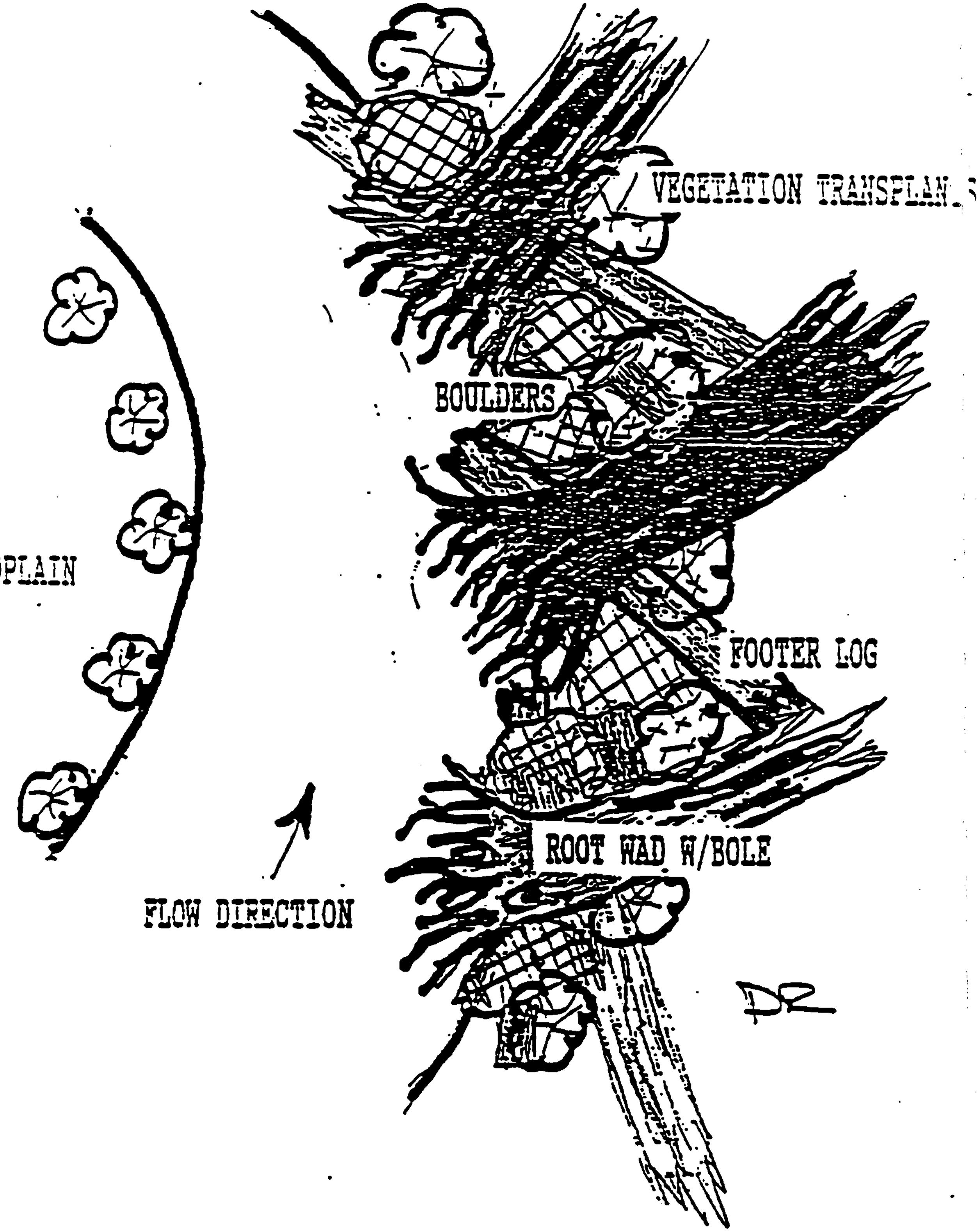
EPA'S DESIGN SPECIFICATIONS FOR RIVER BANK STABILIZATION

EPA Methodology for
Stream and River bank
Stabilization



DESIGN SPECIFICATION #2
SLOPE STABILIZATION/BANK EROSION CONTROL/FISH HABITAT

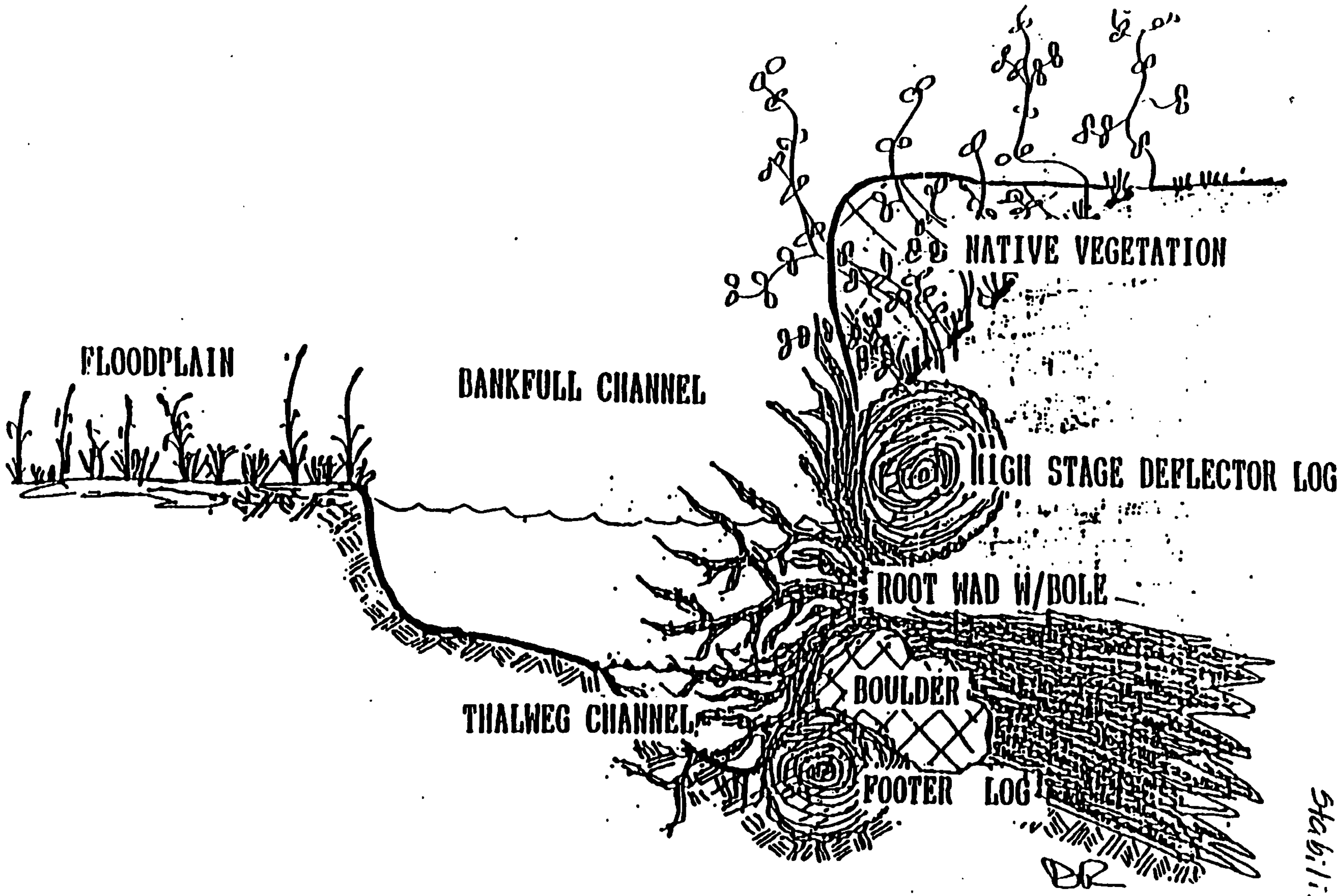
EPA Methodology For Stream and Riverbank stabilization



DESIGN SPECIFICATION #3
PLANVIEW OF NATIVE MATERIAL REVETMENT

F-3

EPA Methodology for Stream and Riverbank Stabilization



DESIGN SPECIFICATION #4
NATIVE MATERIAL REVETMENT FOR BANK STABILIZATION AND FISH HABITAT ENHANCEMENT

Appendix F

Appendix F
Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement

COMPARISON OF 1998 ENVIRONMENTAL REPORT WITH 1992 DRAFT ENVIRONMENTAL IMPACT STATEMENT

Much of the information and the general format for this ER have been drawn from the 1992 Draft Environmental Impact Statement (ICC, 1992) for the proposed Tongue River Railroad Extension. Table F-1 compares the two documents for the convenience of those who are familiar with the DEIS.

Column 1 of Table F-1 identifies the section number and name for this ER. Column 2 identifies the corresponding section or sections, if any, from the DEIS. Column 3 describes the <u>nature</u> (update, edit, rewrite, elimination) and <u>extent</u> (minor, moderate, and substantial) of the changes. In some cases, the reason for the change is presented in parentheses. In most cases, the reason is receipt of updated information on the existing environment (e.g., census estimates) or more recent information on the proposed project (e.g., new cost data or new fuel use data).

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
1.0 Introduction		
1.1 Background	1.1, 1.2	Moderate updates.
1.2 Purpose and Need for Action	1.1	Moderate updates and reorganization.
1.2.1 Purpose of the Proposed Action	1.1	Moderate updates and reorganization.
1.2.2 Need for the Proposed Action	1.3	Moderate updates.
1.3 Overview of this ER	1.2	Minor revisions.
2.0 Description of Existing Environment	2.1	Minor edits for clarity
2.1 Topography	2.2.1	Minor edits for clarity
2.2 Land Use	2.2.2	Minor edits for clarity
2.3 Soils and Geology	2.2.3	Moderate edits to reflect new data from Soil Conservation Service reports and the 1997 ESA Geotechnical Investigation.
2.4 Hydrology and Water Quality	2.2.4	Substantial rewrite [Incorporated data from Tongue River Dam EIS (MDNRC et. al., 1996)].
2.5 Terrestrial Ecology	2.2.5	Existing environment information for Western Alignment added to each subsection, as appropriate.
2.5.1 Vegetation	2.2.5.1	Updated data from the Montana Natural Heritage Program has been included. Review of air photos and performance of ground reconnaissance have confirmed vegetation types listed in the DEIS also occur along the Western Alignment.
2.5.2 Terrestrial Wildlife	2.2.5.2	Minor edits to clarify.
Mule Deer		Minor edits to clarify.
White-tailed Deer		Minor edits to clarify.
Pronghorn		Minor edits to clarify.
Upland Game birds		Minor edits to clarify.
Waterfowl		Minor edits to clarify.
Raptors		Bald eagle nesting information is updated.
Other Mammals		Minor edits to clarify.
Threatened and Endangered Species		Minor edits to clarify, and information on the pallid sturgeon added.
2.6 Aquatic Ecology	2.2.6	Existing environment information for Western Alignment added to each subsection, as appropriate.
2.6.1 Fishery Resources, Tongue River Reservoir	2.2.6.1	Minor edits to clarify. Statistics on reservoir size updated.
2.6.2 Fishery Resources, Tongue River	2.2.6.2	Minor edits to clarify.
Physical Habitat		Minor edits to clarify.
Fishery Resources		Minor edits to clarify.
Invertebrate Fauna		Minor edits to clarify.
Periphyton		Minor edits to clarify.

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
2.7 Social and Economic	2.2.7	
2.7.1 Population for the Five County Region	2.2.7	Minor updates.
2.7.2 Employment, Income, and Poverty Rates for the Five County Region	2.2.7	Minor updates.
2.7.3 Governmental Structure and Services for Five County Region	2.2.7	Moderate revision and minor updates.
2.7.4 Immediate Project Area	---	New material to focus on smaller area.
2.7.5 Northern Cheyenne Indian Reservation	2.2.7	Summarize and minor updates.
2.7.6 Crow Indian Reservation	2.2.7	Summarize and minor updates.
2.8 Transportation	2.2.8	Minor updates.
2.9 Climate and Air Quality	2.2.9	Moderate edits to reflect new federal airshed classifications.
2.10 Noise	2.2.10	Moderate expansion.
2.11 Cultural Resources	2.2.11	Some editing and word changes specific to the Western Alignment.
2.11.1 General Overview	2.2.11.1	Minor changes
2.11.2 Property Types and Qualities of Significance: Prehistory	2.2.11.2	No changes
2.11.3 Property Types and Qualities of Significance: History	2.2.11.3	No changes
2.11.4 Traditional Cultural Properties		Added this section [not in DEIS].
2.12 The Northern Cheyenne and Crow Indian Tribes	2.2.12	Summarized from DEIS with changes specific to Western Alignment.
3.0 Description of the Proposed Action and Its Alternatives		
3.1 Summary of the Overall Tongue River Railroad Project	---	New section to put Proposed Action in context of entire line.
3.2 Description of the Proposed Action and Alternative Routes	3.1	
3.2.1 Construction Activities and Techniques	3.1.1	Moderate updates and new material on construction camps.
3.2.2 Operation and Maintenance	3.1.2	Moderate revisions to reflect operational scenarios.
3.2.3 Western Alignment—Route Description	---	New material.
3.2.4 Four Mile Creek Alternative—Route Description	3.2	Minor revisions and edits for clarity.
3.2.5 The Original Preferred Alignment—Route Description	3.1	Minor revisions and edits for clarity.
3.3 Summary Comparison of Western Alignment and Alternative Routes	3.3	Moderate revisions and reorganization of table.
3.4 No Build Alternative	3.4	Substantial rewrite to focus on Western Alignment.

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
3.5 Related Actions	3.5	Moderate revisions.
4.0 Impacts of the Proposed Action and its Alternative	4.1	Minor edits for clarity and to reflect new ROW acreages.
4.1 Land Use	4.1.1	Moderate edits for clarity and to incorporate new data. Sections 4.1.1.2 - Facilities Acquisition and 4.1.1.3 - Acquisition of Borrow Sites were deleted because they affected lands outside of the boundaries of the project scope.
4.1.1 Construction	4.1.1.1	Minor edits to reflect new ROW acreages and affected landowners.
Severed Parcels		Moderate rewrite for clarity. Land value estimates are not included; instead, the process by which landowners will be remunerated for severed parcels was described.
Displacement of Capital Improvements		Moderate rewrite for clarity. Similar to severed parcels, the process by which landowners will be remunerated for capital improvement impacts severed parcels was described.
Effect on Agricultural Productivity		Minor edits to reflect updated acreages for affected agricultural land.
Impacts to Recreation Areas and Other Land Uses		Minor edits for clarity and to reflect updated information regarding recreational lands.
4.1.2 Operation and Maintenance	4.1.2	Moderate edits to reflect updated data from the MDSL which addresses railroad caused range fires more thoroughly.
4.2 Social and Economic		
4.2.1 Introduction	4.2.1	Moderate revisions to delete coal mining discussion.
4.2.2 Construction	4.2.2	Minor changes for clarity.
Direct Employment	4.2.2.1	Moderate updates and new data for Western Alignment.
Impacts of Construction Camps	4.2.2.3	Expanded discussion.
Impacts to the Local Economy	4.2.2.2	Moderate updates and new data for Western Alignment.
Demand for Services	4.2.2.3	Expanded discussions.
Cumulative Impacts of Construction		
4.2.3 Operation and Maintenance	4.2.3	Moderate updates using 1998 information.
Impacts on Employment and Wages	4.2.3.1-3	Moderate updates using 1998 information.
Regional Fiscal Impacts from Taxes	4.2.4.3	Moderate updates.
4.2.4 Environmental Justice	---	New section.
4.3 Transportation	4.3	
4.3.1 Construction	4.3.1	Moderate edits to include Western Alignment; train delays were re-calculated.
4.3.2 Operation and Maintenance	4.3.2	Moderate edits to include Western Alignment; train delays were re-calculated.

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
Mitigative Measures: Estimate of Crossing Improvements	4.3.2.1	Moderate edits using 1998 information.
Traffic Projections	4.3.3.1	Moderate edits.
4.4 Safety	4.4	Moderate edits to include Western Alignment.
4.4.1 Construction	4.4.1	Moderate edits.
4.4.2 Operation and Maintenance	4.4.2	Moderate edits to include Western Alignment.
Grade-Crossing Accidents	4.4.2.1	Moderate edits to include Western Alignment.
Emergency Services	4.4.2.2	Minor edits.
Derailments	4.4.2.4	Moderate edits to include Western Alignment.
Railroad Grade Concerns	4.4.2.5	Moderate edits.
Hazardous Chemicals and Materials	4.4.2.6	Minor edits.
4.5 Energy	4.5	Moderate edits to include Western Alignment.
4.5.1 Construction	4.5.1	Moderate edits to include Western Alignment.
4.5.2 Operation	4.5.2	Moderate edits to include Western Alignment.
4.5.3 Burlington Northern Santa Fe	4.5.4	Moderate edits.
4.6 Tongue River Dam	4.6	Moderate edits
4.6.1 Construction Impacts	4.6.1	Moderate edits
4.6.2 Operation and Maintenance	4.6.2	Moderate edits
Effects of Trains on Dam Stability	4.6.2.1	Moderate edits
Effect of Railroad on River Flood Levels	4.6.2.2 4.6.2.3	Substantial rewrite [Added new hydrology report results] Section 4.6.2.3 was removed
4.7 Soils and Geology	4.7	
4.7.1 Construction	4.7.1	
Soil Loss	4.7.1.1	Substantial rewrite [New soil loss calculations for all three alignments]
Physical Characteristics	4.7.1.2	Minor edits.
Soil Biological Activity	4.7.1.3	Minor edits.
Saline and Sodic Soils	4.7.1.4	Minor edits.
Slumping	4.7.1.5	Minor edits.
Prime Farmlands		Added this section [not in DEIS].
4.7.2 Operation and Maintenance	4.7.2	Minor edits.
4.8 Hydrology and Water Quality	4.8	
4.8.1 Construction	4.8.1	
Identification and Treatment of Wetlands	4.8.1.1	Substantial edits
Section 404 Permits	4.8.1.2	Moderate edits
Increase in Sediment Loads and Suspended Solids	4.8.1.3	Substantial rewrite [New sedimentation calculations for all three alignments].

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
Changes in Surface Drainage Patterns and Aquifers	4.8.1.4	Moderate edits
Bridge and Culvert Construction	4.8.1.5	Moderate edits
Impacts to Flood-Prone Areas	4.8.1.6	Moderate edits
Water Consumption During Construction		Added this section [not in DEIS]
4.8.2 Operation and Maintenance	4.8.2	Moderate edits
4.9 Aquatic Ecology	4.9	Relative impacts from Western Alignment added to all subsections, as appropriate.
4.9.1 Construction	4.9.1	Minor edits to clarify.
Impact to Aquatic Organisms	4.9.1.1	Minor edits to clarify.
Impact to Fish Populations	4.9.1.2	Minor edits to clarify.
Mitigative Measures for Sedimentation Impacts	4.9.1.3	Minor edits to clarify.
Impact of Fuel and Chemical Spills from Heavy Equipment	4.9.1.4	Minor edits to clarify.
Alteration and/or Loss of Habitat Because of Flood Plain Restriction	4.9.1.5	Minor edits to clarify.
Review of the Resource Values of the Various Segments of the Stream for Sports Fishery, Habitat, and Species	4.9.1.6	Minor edits to clarify.
4.9.2 Operation and Maintenance	4.9.2	Minor edits to clarify.
Impact in the Event of Fuel and Chemical Spills	4.9.2.1	Minor edits to clarify.
Impact from the Use of Herbicides in Maintaining the Right-of-Way	4.9.2.2	Minor edits to clarify.
Impact to Aquatic Organisms Due to Coal Dust from Trains	4.9.2.3	Minor edits to clarify.
4.10 Terrestrial Ecology	4.10	Relative impacts from Western Alignment added to all subsections, as appropriate.
4.10.1 Construction	4.10.1	
Vegetation	4.10.1.1	Review of air photos and performance of site reconnaissance were performed to provide data for Western Alignment vegetation. Four Mile Creek Alternative and Original Preferred Alignment acreage was updated to reflect current project area.
Wildlife	4.10.1.2	Minor edits to clarify.

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
Threatened and Endangered Species	4.10.1.3	Minor edits to clarify. Bald eagle and pallid sturgeon information updated.
4.10.2 Operation and Maintenance	4.10.2	
Vegetation	4.10.2.1	Minor edits to clarify. Information regarding range fires added.
Wildlife	4.10.2.2	Minor edits to clarify.
Threatened and Endangered Species		Minor edits to clarify. Pallid sturgeon data added.
4.11 Air Quality	4.11	Significant rewrite for clarity and to reflect new Emission Estimating Techniques and EPA Emission Factors available since the DEIS was published. This section was also reorganized to discuss each of the four types of pollutant sources more clearly.
4.11.1 Construction		
4.11.2 Operation		
4.11.3 Air Quality Impacts		
4.12 Noise	4.12	
4.12.1 Construction	4.12.1	Updates and addition of Western Alignment.
4.12.2 Operation and Maintenance	4.12.2	Updates and addition of Western Alignment.
4.12.3 Noise Impacts to Tongue Rive Reservoir State Park	4.12.2	Updates and addition of Western Alignment.
4.13 Impact to Visual Resources	---	New section.
4.14 Impacts to the Northern Cheyenne Indian Reservation and to the Crow Indian Reservation	4.13	Summarized from DEIS with updates and changes specific to Western Alignment.
4.14.1 Impacts to the Northern Cheyenne Indian Reservation	[not in DEIS]	Added this section [not in DEIS].
Social and Economic	4.13.1	Summarized from DEIS with changes specific to Western Alignment.
Impacts to terrestrial Ecology	4.13.1	No changes..
Impacts to Cultural Resources and Religious Practices	4.13.1	Summarized from DEIS.
4.14.2 Impacts to Crow Indian Reservation	4.13.2	Summarized from DEIS.
4.15 Cultural Resources	4.14	[See subsections below]. Data in tables have been updated.
4.15.1 Introduction	4.14.1	Edited and words changed to make specific to Western Alignment.
4.15.2 Construction	4.14.2	Edited and words changed to make specific to Western Alignment.
4.15.3 Direct Impacts	4.14.3	Edited and words changed to make specific to Western Alignment.
Prehistoric Properties in the Right-of-Way	4.14.3.1	Edited and words changed to make specific to Western Alignment.
Historic Properties in the Right-of-Way	4.14.3.2	Edited and words changed to make specific to Western Alignment.
Potential Impacts to Sacred Sites	4.14.3.3	Edited and words changed to make specific to Western Alignment.

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
Prehistoric Properties Within a 3,000-Foot Right-of-Way Corridor	4.14.3.4	Edited and words changed to make specific to Western Alignment.
Historic Properties Within a 3,000-Foot Right-of-Way Corridor	4.14.3.5	Edited and words changed to make specific to Western Alignment.
Native American Properties Within a 3,000-Foot Right-of-Way	4.14.3.6	Edited and words changed to make specific to Western Alignment.
4.15.4 Indirect Impacts	4.14.4	Minor editing and words changed.
4.15.5 Operation and Maintenance	4.14.5	Minor editing and words changed.
4.15.6 Consultation and Mitigative Measures	4.14.6	Minor editing and words changed.
5.0 Unavoidable Adverse Environmental Impacts of the Proposed Action and Its Alternatives		
5.1 Land Use	5.1	Moderate edits to reflect new ROW acreages.
5.2 Socio-economic	5.2	Moderate edits.
5.3 Transportation	5.3	Moderate edits.
5.4 Safety	5.4	Minor edits.
5.5 Soils	5.5	Minor edits.
5.6 Hydrology and Water Quality	5.6	Moderate edits
5.7 Aquatic Ecology	5.7	Minor edits.
5.8 Terrestrial Ecology	5.8	Minor edits.
5.9 Biodiversity	---	New Section [not in DEIS].
5.10 Air Quality	5.9	Moderate edits for clarity.
5.11 Noise	5.10	Minor edits.
5.12 Aesthetics	---	New Section [not inDEIS].
5.13 Native Americans	5.12	Edited and changed words to make specific to Western Alignment.
5.14 Cultural Resources	5.11	Moderate edits and new paragraph added.
6.0 Recommended Mitigation Measures	6.0	Chapter Three of Final EIS used as template. See main text for documented changes from Chapter Three.
7.0 Informal Consultation and Initial Agency Comments		New section [not in DEIS].

Table F-1. Comparison of 1998 Environmental Report with 1992 Draft Environmental Impact Statement (continued)

Section in this ER	Corresponding DEIS Section	Changes: Extent/Nature
Appendix A: Coordination and Consultation		New appendix [not in DEIS]. Appendix A in DEIS is the mitigation plan-this has been replaced with Chapter Six of this report.
Appendix B: References	Appendix C	Substantial rewrite. Appendix B of the DEIS is the Emergency Warning and Evacuation Plan maps which were not included in this report.
Appendix C: List of Preparers	Appendix D	Substantial rewrite
Appendix D: Surface Water Analyses		New appendix [not in DEIS].
Appendix E: EPA Stabilization Methods		New appendix [not in DEIS].
Appendix F: Comparison of ER with 1992 DEIS		New appendix [not in DEIS].
Appendix G: Programmatic Agreement		New appendix [not in DEIS].
Appendix H: Biological Assessment and Biological Opinion		New appendix [not in DEIS].

Appendix G

Appendix G
Programmatic Agreement

[Reproduced as it appears, including page numbers, in the Final Environmental Impact Statement]

F.D. 30186 (SUB NO. 2)

TONGUE RIVER RAILROAD COMPANY'S PROPOSED EXTENSION BETWEEN ASHLAND AND DECKER, MT

FINAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX G

PROGRAMMATIC AGREEMENT

PROGRAMMATIC AGREEMENT BETWEEN THE SURFACE TRANSPORTATION BOARD, THE MONTANA STATE HISTORIC PRESERVATION OFFICER, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION REGARDING CONSTRUCTION AND OPERATION OF THE ASHLAND TO DECKER PORTION OF THE TONGUE RIVER RAILROAD COMPANY

WHEREAS, the Surface Transportation Board (STB)[1] has determined that construction and operation of the Ashland to Decker section of the Tongue River Railroad Company may have an effect upon historic properties included on or eligible for inclusion on the National Register of Historic Places, and has consulted with the Tongue River Railroad Company (TRRC), Montana State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) pursuant to Section 800.13 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act, 16. U.S.C. 470f (the Act); and

WHEREAS, the Northern Cheyenne Tribe, and the Bureau of Land Management, U.S. Department of Interior have participated in consultation and have been invited to concur in this Agreement;

WHEREAS, the consulting parties have considered the applicable requirements of the Act, the American Indian Religious Freedom Act, 42 U.S.C. 1996 <u>et. seq.</u> (AIRFA), and the Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 <u>et. set.</u> (NAGPRA) in the course of consultation.

NOW, THEREFORE, the stb, TRRC, SHPO, and the Council agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

STIPULATIONS

STB shall ensure that the following measures are carried out:

I. <u>Identification and Evaluation of Historic Properties (Inventory Report)</u>

a. TRRC will inventory a 200 foot-wide right-of-way (ROW), staging areas, work camps, unimproved construction access routes, and other ancillary areas related to the undertaking to identify

---

[1] The Surface Transportation Board (STB) was created with the passage of the Interstate Commerce Commission Termination Act of 1995 (Pub. L. No. 104-88). STB, an independend body within the U.S. Department of Transportation, is responsible for administering rail, pipeline, and certain adjudicatory functions involving motor and water carriers. These responsibilities are similar to those duties formerly administered by the Interstate Commerce Commission.

historic resources which may be eligible for or listed on the National Register of Historic Places. The inventory will also seek to identify historic and prehistoric sites, traditional cultural properties as defined in National Register Bulletin 38 (National Park Service 1990), historic structures, and cultural landscapes. The inventory will be completed under the supervision of persons meeting the professional qualifications standards provided in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, 48 FR 44716-44742 (Secretary's Standards), and in conformance with the Secretary's Standards for identification (48 FR 44720-44723).

b. A corridor one-mile wide, centered on the proposed railroad route, will be established to consider visual, audible, and atmospheric effects, as well as other indirect effects to standing structures, cultural landscapes, and properties of traditional cultural value. The width of this corridor may be adjusted to take into consideration varying topographic conditions, in consultation with the SHPO. The corridor will be subjected to an inventory, the purpose of which is the identification and evaluation of historic structures, cultural landscapes, and properties of traditional cultural value that may be affected by the undertaking.

c. The area of potential effects (APE) for the undertaking comprises those areas described in Stipulation I.a. and I.b. above.

d. Representatives of the Northern Cheyenne Tribe will be invited to participate in the inventories in order to help identify, document, and evaluate properties of spiritual and traditional cultural value to Native American. This invitation will include not only the Ashland to Decker proposed alignment but also the permitted alignment from Miles City to Ashland. The Northern Cheyenne Tribe will designate a representative(s), to accompany the cultural resource inventory crew. Tribal representatives will be included during inventory of the staked ROW, staging areas and work camps and the area of indirect affect identified as the area within one mile of the centerline of the ROW.

TRRC will ensure that the tribally designated representative(s)--including the Culture Committees from the Northern Cheyenne, Crow, Arapaho, Oglala and Miniconjou--are consulted regarding the traditional cultural significance of historical resources identified during the inventory. Traditional cultural significance will not be regarded as limited to "religious" or "spiritual" significance, but will include all aspects of significance as outlined in National Register Bulletin 38.

In addition, during the cultural resource inventory, the Northern Cheyenne representative(s) will be invited to identify and compile a list of traditionally-important plants that occur in the

APE as well as the gathering sites and access points for these plants. This information will be made available to the TRRC in order that TRRC can ensure appropriate protection for and continuing access to these plants.

e. TRRC will document the results of the inventory(s) completed and will make recommendations for eligibility for known and newly identified sites, structures, and landscapes for inclusion in the National Register of Historic Places (National Register). TRRC shall submit these results and recommendations in a report to the STB.

f. The STB shall review the inventory report and provide TRRC with recommendations for any needed revisions. Upon receipt of the inventory(s) report, the STB shall provide a copy(s) to the Northern Cheyenne Culture Committee within 30 days for their review and comment. The STB shall require the return of comments within 45 days of the Culture Committee's receipt of the copy(s).

g. Upon its approval of the report, STB will make determinations of eligibility in a manner consistent with 36 CFR 800.4(c) and pertinent guidelines of the National Park Service, Council, and SHPO, and will request SHPO's comments on these determinations. SHPO shall be afforded 30 days to review the report and provide its comments on the results and the STB's determinations of eligibility. These comments shall be taken into consideration in any final revisions to the report.

II. Consultation on Treatment (to Prepare a Treatment Plan)

a. Should any prehistoric sites, historic sites, structures, or cultural landscapes within the APE be determined eligible for inclusion in the National Register pursuant to Stipulation I.f., STB will evaluate the potential effects of the undertaking on those properties, and will consult with TRRC, SHPO and other interested parties, as appropriate, about options to mitigate or negate potential effects.

b. Should any traditional cultural property or cultural landscape of value to a Native American tribe or other ethnic group be determined eligible for inclusion in the National Register pursuant to Stipulation I.f., STB will consult with the SHPO and the Native American tribe(s) or others who ascribe value to the property about the potential effects to those properties and about options to mitigate or negate those effects. The STB will coordinate the consultation process, which shall be scheduled for completion within a 45 day period. For properties of this type that are not eligible for the National Register, STB will consult further with the applicable Native American tribe and take such actions as are feasible and prudent to advance the purposes of the American Indian Religious Freedom Act.

c. TRRC shall invite representatives of the Crow, Arapaho, Oglala, and Miniconjou to meet with their contractors and Northern Cheyenne representatives who participated in the inventory to discuss the inventory results, and how properties of traditional cultural value can most respectfully be managed with regard to this undertaking.

III. Treatment Plan (for Eligible Resources--Native American and Non-Native American)

a. STB will ensure that TRRC prepares and implements a Treatment Plan(s) that will address the effects of the proposed undertaking on historic properties and that balances the concerns of the parties to this Agreement. The plan(s) shall (1) identify all historic properties in the APE, (2) identify the nature of the effects to which each property will be subjected, and (3) identify the treatment strategies proposed to minimize or mitigate the effects of the undertaking. The treatment plan(s) will incorporate measures identified by Native American representatives as necessary for mitigation of adverse affects to properties that are determined to be significant for their traditional cultural values.

b. Whenever possible, in-place preservation shall be the preferred alternative. In consultation with STB, the SHPO, and other appropriate local agencies, TRRC shall develop specific procedures to preserve historic properties in-place. These procedures may include monitoring of historic properties by historians, archaeologists and Native American representatives.

c. Where data recovery is determined by STB in consultation with the SHPO to be the most prudent and feasible treatment option, the research design proposed in the Treatment Plan(s) shall specify, at a minimum:

1. the historic properties to be affected and the nature of those effects;

2. the research questions to be addressed through data recovery, with an explanation of their relevance and importance;

3. the fieldwork and analytical strategies to be employed, with an explanation of their relevance to the research questions;

4. proposed methods of dealing with individual discovery situations;

5. methods to be used in data management and dissemination of data, including a schedule;

6. the proposed disposition of recovered materials and records including the disposition of Native American sacred items, human remains and grave goods;

7. proposed methods for disseminating results of the work to the interested public;

8. proposed methods by which relevant Native American groups and local governments will be kept informed of the work and afforded an opportunity to participate; and

9. a proposed schedule for the submission of progress reports to the STB.

d. The data recovery plan shall be consistent with the Secretary's Standards for Archaeological Documentation (48 FR 44734-37) and take into account the Council's publication, Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation 1980), subject to any pertinent revisions the Council may make in the publication prior to completion of the data recovery plan, and SHPO guidance.

e. Reports resulting from the implementation of data recovery in accord with Stipulation III.c. will be submitted to STB and SHPO for review. Upon receipt of the draft report(s), the STB shall provide a copy(s) to the Northern Cheyenne Culture Committee within 30 days for their review and comment. The STB shall require the return of comments within 45 days of the Culture Committee's receipt of the copy(s). Comments will be incorporated, as appropriate into the final report(s). TRRC will ensure that reports are responsive to contemporary professional standards, and to the Secretary's Standards for Archaeological Documentation (48 FR 44734-37). A copy of all final reports will be provided to the SHPO, STB, and Council. Upon receipt of the final report(s), the STB shall provide a copy(s) to the Northern Cheyenne Culture Committee, the Bureau of Indian Affairs, and the Bureau of Land Management within 30 days.

f. After consulting with appropriate parties, standing historic structures which cannot be avoided shall be recorded to the level of documentation prescribed by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) of the National Park Service. Such recordation may include a site history, photographs, measured drawings, etc. Copies of this documentation must be accepted by HABS/HAER prior to any alteration of the historic structure. Copies of the accepted documentation will be provided to the SHPO.

IV. Review of Treatment Plan

STB will submit the Treatment Plan(s) to all parties to this Agreement for a 45-day review period. If any party fails to submit their comments within 45 days of receipt, the STB shall assume their concurrence with the plan. If any party objects to the plan, or any part thereof, the STB will consult with the objecting party to resolve the objection in accordance with Stipulation IX.

V. Construction

Once STB has agreed, in consultation with other parties to this Agreement, on the adequacy of the project Treatment Plan(s), STB may allow TRRC to begin construction in those portions of the ROW that do not contain eligible historic properties. Where historic properties are present, STB may allow construction to proceed once the agreed upon data recovery fieldwork/treatment as specified in the Treatment Plan(s) is completed and approved by STB.

VI. Discovery

If a previously undiscovered archaeological, historical, or cultural property is encountered during construction, resonable efforts will be made to avoid or to minimize harm to the property until TRRC can evaluate and, if necessary mitigate impacts to the new discovery. Evaluation and mitigation will be carried out in consultation with the SHPO and STB as expeditiously as possible in accordance with 36 CFR 800.11(b)(1). The Council will be notified if eligible resources are discovered and mitigation has been undertaken.

VII. Human Remains

a. If human remains are encountered on Federal lands, STB or the appropriate Federal land management agency shall consult with Native Americans, or other appropriate groups to determine treatment and disposition measures consistent with applicable Federal and state laws (such as the Native American Graves Protection and Repatriation Act). If human remains are encountered on State or private laws, STB will ensure that they are treated according to the provisions of the Montana Human Skeletal Remains and Burial Site Protection Act.

b. TRRC will make every effort to avoid disturbing known human burial sites. Where avoidance is not possible, burials will be removed prior to construction and reinterred in accordance with reburial procedures established by applicable Federal and State law and tribal policy, and in accordance with procedures identified in the Treatment Plan(s).

c. In the case of inadvertent discovery of human remains during construction activities, STB will attempt to identify the appropriate Native American tribe(s) or other ethnic group(s) related to the burial, and consult with them over the treatment of remains in accordance with procedures identified in the Treatment Plan(s).

VIII. Curation

STB shall ensure that all records and materials resulting from identification and data recovery efforts are curated in accordance with '36 CFR Part 79, provided that materials to be returned to their owners will be maintained in accordance with 38 CFR Part 79 until their analysis is complete and they are returned.

IX. Dispute Resolution

Should any party of this Agreement object within 30 days to any actions pursuant to this Agreement, STB shall consult with the objecting party to resolve the objection. If STB determines that the objections cannot be resolved, STB shall forward all documentation relevant to the dispute to the Council. Within 30 days after receipt of all pertinent documentation, the Council will either:

1. provide STB with recommendations, which STB will take into account in reaching a final decision regarding the dispute; or

2. notify STB that it will comment pursuant to 36 CFR Part 800.6(b), and proceed to comment. Any Council comment provided in response to such a request will be taken into account by the STB in accordance with 36 CFR Part 800.6(c)(2) with reference to the subject of dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; STB's responsibility to carry out all actions under this Agreement that are not the subject of the dispute will remain unchanged.

X. Amendments

Any party to this Agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment.

XI. Termination

Any party to this Agreement may terminate it by providing thirty (30) days notice, in writing, to the other parties, provided that the parties will consult during the period prior to termination to seek agreement or amendments or other actions that would avoid termination. In the event of a termination, STB will comply with 36 CFR Part 800.4 through 800.6 with regard to this undertaking.

Execution and implementation of this Memorandum of Agreement evidences that STB has afforded the Council a reasonable opportunity to comment on construction and operation of the proposed Ashland to Decker portion of the Tongue River Railroad Company line.

SURFACE TRANSPORTATION BOARD

By:____ Date:____________

MONTANA STATE HISTORIC PRESERVATION OFFICER

By____ Date:____________

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By:____ Date:____________

TONGUE RIVER RAILROAD COMPANY

By:____ Date:____________

Concurrence:

NORTHERN CHEYENNE TRIBE

By:____ Date:____________

BUREAU OF LAND MANAGEMENT, U.S. DEPARTMENT OF INTERIOR

By:____ Date:____________

Appendix H

Appendix H
Biological Assessment and Biological Opinion

[Reproduced as it appears, including page numbers, in the Final Environmental Impact Statement]

F.D. 30186 (SUB NO. 2)

TONGUE RIVER RAILROAD COMPANY'S PROPOSED EXTENSION BETWEEN ASHLAND AND DECKER, MT

FINAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX C

BIOLOGICAL ASSESSMENT AND BIOLOGICAL OPINION

BIOLOGICAL ASSESSMENT

**For Endangered or Threatened Species,
Tongue River Railroad Company
Additional Rail Line From Ashland to Decker, Montana**

Prepared by

**Western Technology and Engineering, Inc.
Helena, Montana
&
Historical Research Associates, Inc.
Missoula, Montana**

**for
Interstate Commerce Commission
Section of Environmental Analysis**

June 1995

C-2

BIOLOGICAL ASSESSMENT
For Endangered Or Threatened Species,
Tongue River Railroad Company
Additional Rail Line From Ashland to Decker, Montana

June, 1995

C-3

CONTENTS

PAGE

INTRODUCTION 1

DESCRIPTION OF THE PROJECT 4

DESCRIPTION OF THE AFFECTED AREA 7

CURRENT STATUS OF ENDANGERED SPECIES ALONG THE TRRC EXTENSION . 9
- Black-footed ferret 9
- Peregrine falcon 11
- Bald eagle 12
- Pallid sturgeon 14

METHODS 15

ANALYSIS OF EFFECTS; PROPOSED MITIGATION MEASURES 17
- Black-footed ferret 17
- Peregrine falcon 19
- Bald eagle 20
  - Construction 22
  - Operation 27
  - Related and unrelated actions, and cumulative effects 29
  - Mitigation during construction 29
  - Mitigation during operation 33
- Pallid sturgeon 35

DETERMINATION OF EFFECT 36

LITERATURE CITED 37

APPENDICES 40
- I. Letter from Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, May 17, 1995 40
- II. Description of bald eagle nest site management zones 46

CONTENTS (continued)

PAGE

FIGURES

1. Location of the TRRC Extension and bald eagle nests 01, 02 and 03 5
2. Bald eagle management zones in relation to the TRRC Extension route, bald eagle nest 01 23
3. Bald eagle management zones in relation to the TRRC Extension route, bald eagle nest 03 24
4. Bald eagle management zones in relation to the TRRC Extension route, bald eagle nest 02 25
5. Bald eagle Nest 03 from county road, April, 1995 26
6. Approximate route of TRRC Extension is relation to Nest 03 26

BIOLOGICAL ASSESSMENT
For Endangered Or Threatened Species,
Tongue River Railroad Company
Additional Rail Line From Ashland to Decker, Montana

INTRODUCTION

On November 17, 1989 the Interstate Commerce Commission (ICC) published in the Federal Register its intent to prepare an Environmental Impact Statement (EIS) for the Tongue River Railroad Company's (TRRC) proposed construction and operation of a 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension). The TRRC Extension would extend the already approved but not yet built 89-mile rail line from Miles City to Ashland, Montana. The primary purpose of the TRRC Extension would be to allow the shipment of coal from operating mines near Decker, Montana north to the previously approved Terminus Point 1 near Ashland.

On December 28, 1989 the U.S. Fish and Wildlife Service (USFWS), which administers the Endangered Species Act (ESA), notified the ICC that three species, all listed as endangered, could potentially occur in the area to be affected by the TRRC Extension (Palawski, 1989): 1) the bald eagle (*Haliaeetus leucocephalus*) could nest along the Tongue River, and could occur as a migrant and winter resident (note: the bald eagle has since been recommended for downlisting from endangered to threatened); 2) the peregrine falcon (*Falco peregrinus*) could occur as a migrant; and 3) the black-footed ferret (*Mustela nigripes*) could occur in black-tailed prairie dog (*Cynomys ludovicianus*) colonies. On November 10, 1994 the USFWS added the pallid sturgeon (*Scaphirhynchus albus*), which could occur in the lower Tongue River, to this list (McMaster, 1994).

As part of its responsibilities under the ESA, the ICC must submit to the USFWS a Biological Assessment to address the potential effects of the TRRC Extension on these four species, and to propose measures to mitigate these effects. On January 23, 1990 the ICC designated Historical Research Associates, Inc. (HRA) to be the ICC's non-Federal representative to prepare the Biological Assessment (Kaiser, 1990). In turn, HRA contracted Western Technology and Engineering, Inc. (WESTECH) to write the Biological Assessment in October, 1994.

HRA began contacts with the USFWS, Montana Department of Fish, Wildlife and Parks (MDFWP), area residents and other knowledgeable parties regarding the occurrence and habitat of these listed species along the proposed TRRC Extension in 1990. On July 29, 1991 the ICC requested additional input from the USFWS on the EIS. The USFWS used its reply on August 29, 1991 to reconfirm the list of species to be addressed by the Biological Assessment (Harms, 1991a).

HRA's contacts with various parties revealed that little was known about bald eagle nesting along the Tongue River. HRA conferred with the USFWS and it was agreed that surveys for wintering and nesting bald eagles along the Tongue River should be conducted (Newell, 1991). The USFWS formally agreed with this procedure in a letter dated December 24, 1991 (Harms, 1991b). These surveys were conducted in February and April, 1992.

In April 1992 the USFWS released its Fish and Wildlife Coordination Act report for the Tongue River Dam Rehabilitation Project (USFWS, 1992), a project not related to the TRRC Extension. This report, and a subsequent update letter (Harms, 1992), summarized the known information on the occurrence of threatened or endangered species in an area which encompassed the proposed TRRC Extension route.

In July 1992, the ICC issued the draft Environmental Impact Statement (DEIS) for the Extension (ICC, 1992). In compliance with National Environmental Policy Act (NEPA) requirements, the DEIS considered alternatives to the proposed route for the Extension. The DEIS concluded that one of these alternatives, called the Four Mile

Creek alternative, was less environmentally sensitive than the proposed route. After receipt of comments on the DEIS, however, the ICC reviewed its comparison of the Four Mile Creek alternative with the proposed route. In a supplement to the DEIS (ICC, 1994), the ICC determined that the Four Mile Creek alternative would result in significantly more environmental effects than the proposed route, including greater land disturbance, increased soil erosion, greater deforestation, greater impacts to big game and breeding bird populations, increased air pollution, and more impact to human residences. In addition, TRRC realigned the proposed TRRC Extension route in the vicinity of the Tongue River Dam and Tongue River Reservoir, to mitigate some of the potential impacts from the original route that were identified in the DEIS. Therefore the proposed route of the TRRC Extension, as modified in the supplement to the DEIS, appears to be a more feasible alignment than the Four Mile Creek alternative.

Following discussions between the ICC and the USFWS, the ICC requested HRA to submit a copy of the first draft of the Biological Assessment to the USFWS to review in mid-January, 1995. This was followed by a February 2, 1995 meeting between USFWS, WESTECH and TRRC personnel to discuss revisions to the first draft. A second draft was submitted to the USFWS on March 3, 1995. On March 24, 1995 USFWS, TRRC and WESTECH personnel discussed revisions to the second draft during a conference call. At that time it was apparent that concerns regarding all species except the bald eagle had been resolved. A third draft of the bald eagle portions of the Biological Assessment was submitted to the USFWS on April 11 and discussed during a meeting on April 13, 1995. A fourth draft of the bald eagle section was then written. Between April 18 and May 11, 1995 TRRC, HRA and WESTECH asked several members of the Montana Bald Eagle Working Group (MBEWG) to review the fourth draft, and for recommendations regarding the bald eagle. The MBEWG is an interagency committee established in 1982 to assist in the achievement and maintenance of goals and objectives for recovery of bald eagles in Montana, as presented in the Recovery Plan for the Pacific Bald Eagle (USFWS, 1986), and to coordinate management, research and information exchange on bald eagles (MBEWG, 1994). MBEWG members who reviewed the bald eagle portions of this Biological Assessment included Dennis Flath, Montana Department of Fish, Wildlife and Parks; Rob Hazlewood, U.S. Fish and Wildlife Service; Dan Hinckley, Bureau of Land Management; and Lorin Hicks and Brian Gilbert, Plum Creek Timber Company. Comments representative of the MBEWG's input are contained in a letter from Dennis Flath dated May 17, 1995 (Appendix I).

The Biological Assessment is not an alternatives analysis document, but is concerned with the agency's preferred action. Therefore this Biological Assessment will address the TRRC Extension from the Ashland Terminus Point 1 south to the Decker mines, as described in the supplement to the DEIS (ICC, 1994).

DESCRIPTION OF THE PROJECT

The primary purpose of the TRRC Extension would be to transport coal from existing mines near Decker, Montana to the previously approved but not yet built rail line between Miles City and Terminus Point 1 near Ashland, Montana. From Terminus Point 1, the TRRC Extension would follow the Tongue River drainage approximately 41 miles south, passing on the west side of the Tongue River Reservoir, to its connection with Spring Creek Coal Company's rail line as well as connections to the East Decker and West Decker coal mines (Figure 1).

In terms of construction and operation, the TRRC Extension would be similar to other rail lines that serve coal mines in southeastern Montana. The track would be comprised of 136-pound continuous welded rail on treated hardwood ties, resting on 12 inches of ballast and 15 inches of sub-ballast. The right-of-way (ROW) would vary between 75 and 300 feet in width, and would average 200 feet. Facilities associated with the rail line would include road and railway crossings, culverts, cattle passes, signal and communication facilities, etc. There would be two 8500-feet

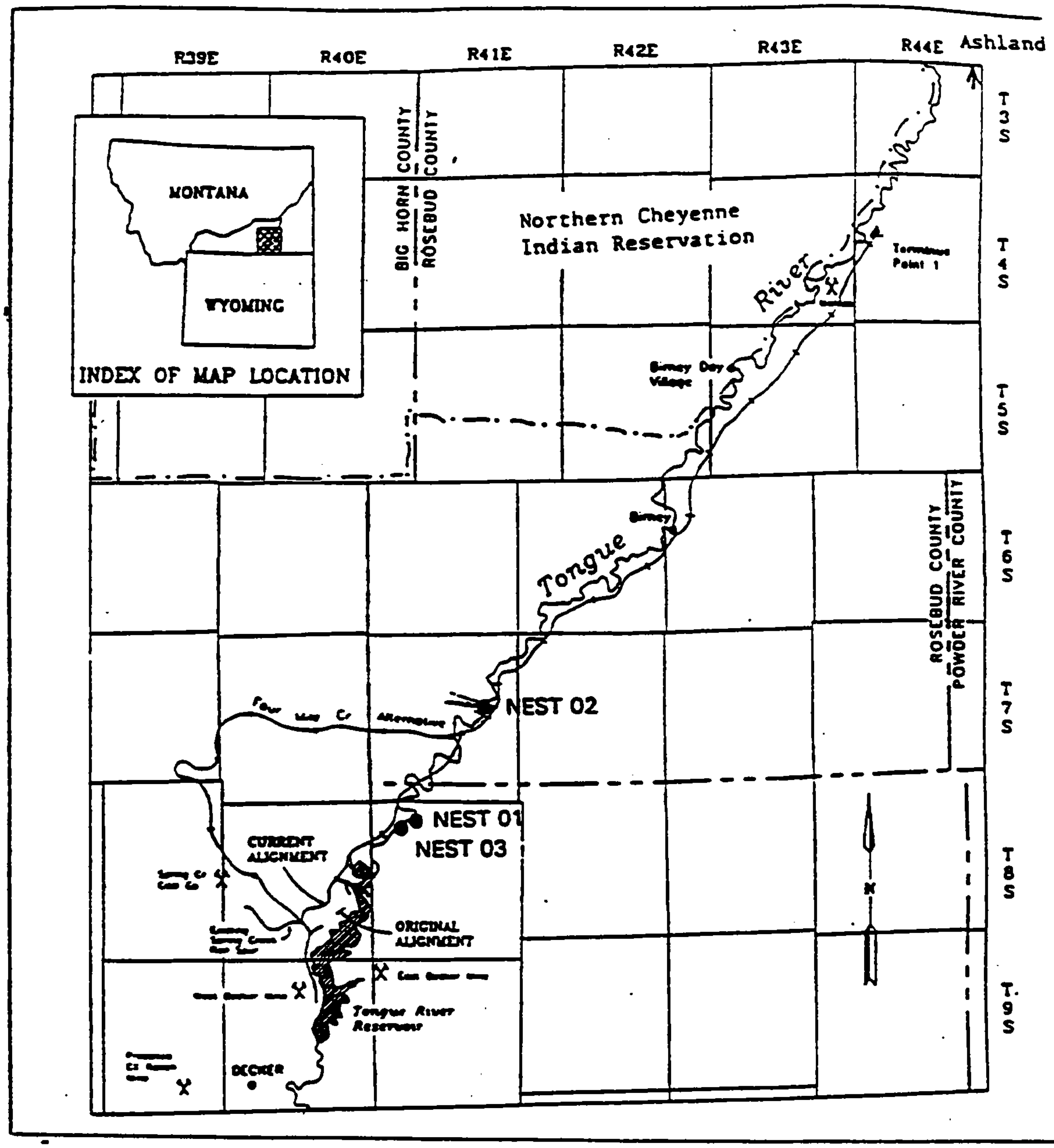


Fig. 1. Location of the TRRC Extension (adapted from ICC, 1994) and bald eagle nests 01, 02 and 03.

passing sidings; at these two locations and at one other site, shorter tracks for equipment and car storage would also be constructed.

There would be 16 crossings of ephemeral streams, using culverts designed to withstand a 25-year flood event. There would be one bridge (150 feet long) over the Hanging Woman Creek road, one bridge (400 feet long) over Hanging Woman Creek, and five bridges over the Tongue River (one would be approximately 400 feet long, while the others would be approximately 500 feet long). All bridges over waterways would be designed to withstand a 100-year flood event.

There would also be a tunnel (about 600 feet long) built through a high ridge between two of the Tongue River bridges.

Depending on weather, construction would most likely occur from April through October over a 3-year period. Construction crews would live in camps at Ashland, Birney and Decker. During construction there would be a variety of heavy equipment operating within the ROW to clear existing vegetation, salvage topsoil, grade/cut/fill the ROW, prepare the railbed, and reclaim and revegetate disturbed areas and sideslopes. Track would then be laid from north to south, followed by ballast placement and final clean up.

Once the TRRC Extension is in operation, it would operate 24 hours a day, 365 days a year. Initially there would be 4-5 round trips of unit trains (one unit train would be comprised of three locomotives and 112-125 coal hopper cars) each day. Trains would operate at speeds up to 50 mph.

Periodic maintenance of the rail line and ROW would be required, depending on the amount of train traffic. Access to the ROW would be limited to public grade crossings or to private grade crossings where access agreements would be made with the landowner. Maintenance, including mechanical or herbicidal vegetation control, would primarily be accomplished with equipment travelling along the rail itself.

DESCRIPTION OF THE AFFECTED AREA

For the purposes of this Biological Assessment, the area to be potentially affected by the TRRC Extension is defined as the Tongue River valley along the preferred route from Terminus Point 1 near Ashland, to the mines near Decker. The reasons for this definition are: 1) any effects on the four species considered by this Biological Assessment, as a result of construction of the TRRC Extension, would be limited to the river valley. Use of neighboring uplands by these species would not be affected by construction; 2) effects as a result of operation of the TRRC Extension would largely be limited to the Tongue River valley. Effects outside the valley, such as recreational shooting of prairie dogs in upland habitats by rail employees, would be highly speculative and unpredictable; and 3) it is reasonable to assume that any effects to these four species at the existing mines near Decker which would be served by the TRRC Extension, have already occurred as a result of the construction and operation of those mines.

The Tongue River begins in the Big Horn Mountains in Wyoming and flows north to its confluence with the Yellowstone River at Miles City, Montana. It drains an area of about 5,379 mi^2, of which 70 percent is in Montana. At its confluence with the Yellowstone River, the Tongue River has an average annual flow of about 420 cubic feet per second (cfs) (Elser et al., 1977).

Within the area potentially affected by the TRRC Extension, the Tongue River is greatly influenced by the Tongue River Dam and Reservoir, which regulate downstream flow. The dam was constructed in 1940 to store water for downstream irrigation; the impoundment covers about 3,500 surface acres (Elser et al., 1977). In the TRRC Extension area downstream from the reservoir, most tributaries of the Tongue River are ephemeral. The TRRC Extension will cross only one perennial tributary, Hanging Woman Creek (ICC, 1992).

Most of the annual flow of the Tongue River comes from seasonal snowmelt runoff in the Big Horn Mountains, with half the annual flow occurring from May to July. In contrast, tributaries below the reservoir derive their most significant flows during and after precipitation. In most years these tributaries do not have consistent flows associated with snowmelt runoff, and exhibit little base flow (ICC, 1992).

Immediately downstream from the dam, the Tongue River supports a trout fishery. This fishery is quickly supplanted by a more typical prairie river fishery comprised of native species such as sauger (*Stizostedion canadense*) and channel catfish (*Ictalurus punctatus*), supplemented with introduced species such as smallmouth bass (*Micropterus dolomieui*) and northern pike (*Esox lucius*).

The valley is defined by hilly, sometimes rugged uplands that rise 200-500 feet above the valley floor. In the narrower upstream portion of the TRRC Extension area, these hills are close to the floodplain and are generally forested with ponderosa pine (*Pinus ponderosa*) and Rocky Mountain juniper (*Juniperus scopulorum*), particularly on north and east facing slopes. Downstream, steeper forested hills are interspersed with rolling grassland and shrubland benches.

The Tongue River meanders across the valley bottom. Its immediate banks are vegetated by deciduous forest in various stages of succession, from shrubs to mature cottonwood (*Populus deltoides*) gallery forest. Portions of the adjoining valley bottom have been developed for irrigated and dryland hay and crop production.

The combination of upland, riparian, agricultural and aquatic habitats supports a good diversity of terrestrial and aquatic wildlife. Coal mine environmental studies in the vicinity have identified at least 166 species of birds, 44 mammals, 10 reptiles and four amphibians, while the Tongue River Reservoir supports 24 species of fish, and the Tongue River along the TRRC Extension route supports 23 species of fish (ICC, 1992).

The primary land use of the Tongue River valley along the TRRC Extension route is agriculture, particularly cattle grazing and hay production. There are operating coal mines near Decker (the south end of the TRRC Extension) and potential coal mines near Ashland (the north end of the TRRC Extension). Most human residences along the route are associated with ranches; there are small communities at Birney and Birney Day Village (on the Northern Cheyenne Indian Reservation). The Reservation's east boundary is the Tongue River. The TRRC Extension will not cross Reservation lands.

CURRENT STATUS OF ENDANGERED SPECIES ALONG THE TRRC EXTENSION

As discussed earlier, the bald eagle, black-footed ferret, peregrine falcon and pallid sturgeon are listed as endangered, although the bald eagle has been recommended for downlisting to threatened. No species proposed for listing were identified by USFWS for analysis in this Biological Assessment.

Black-footed ferret

No black-footed ferrets are known to occur in the Tongue River valley in the vicinity of the TRRC Extension. Ferrets were reintroduced into Montana in autumn 1994, but the reintroduction site is more than 140 air miles northwest of the TRRC Extension route. The route is also more than 180 air miles from the Wyoming reintroduction site, and more than 120 air miles to the last known site of a naturally occurring ferret population near Meteetsee, Wyoming. Therefore it is highly unlikely that black-footed ferrets from these three locations would disperse to the TRRC Extension vicinity.

Critical habitat of the black-footed ferret is considered to be prairie dog colonies (Biggins et al., 1985). In the Tongue River valley, black-tailed prairie dogs build colonies in grasslands on gentle to rolling slopes on benches adjacent to the river, as well as in upland habitats away from the valley bottom.

The USFWS (USFWS, 1989) determined that, in order to constitute acceptable black-footed ferret habitat, black-tailed prairie dog colonies or complexes of colonies (a prairie dog colony complex is defined as two or more neighboring colonies each less than seven km from the other) must be at least 80 acres in size. Further, colonies should contain 12 active burrows/ha (4.7 active burrows/acre) (Biggins et al., 1993).

Historically, prairie dog populations on non-Native American lands in the Tongue River valley have been controlled through poisoning and shooting. Consequently, colonies tend to be small and somewhat widely dispersed. Depending on landowner tolerance, both the number of colonies and the size of individual colonies (both areal size and the density of active burrows) may gradually increase before control measures are again applied.

On Native American lands (i.e., the Northern Cheyenne Indian Reservation), prairie dog control has been much less consistent or systematic. In the early 1990's, investigators identified a large black-tailed prairie dog complex along the east edge of the Reservation (GeoResearch, Inc., 1991). This complex encompassed about 10,000 acres of active prairie dog colonies (ICC, 1992). In 1994 many of these colonies were debilitated by sylvatic plague, reducing the size of the active complex. However, prairie dogs may reoccupy affected colonies (Steve Oddan, biologist, U.S. Fish and Wildlife Service, Billings, Montana, personal communication, December 1, 1994). Therefore, for the purposes of this Biological Assessment, potential black-footed ferret habitat was considered to be the entire 10,000 acre complex.

The USFWS expressed concern that prairie dog colonies on the east side of the Tongue River (non-Native American lands) might be part of this complex (ICC, 1992). Rivers might be seasonal barriers to black-footed ferret movement (Biggins et al., 1993), but considering the historical distribution of ferrets from Canada to Mexico (Hillman and Clark, 1980), it is improbable that streams the size of the Tongue River represent impassable barriers to ferret dispersal. If the Northern Cheyenne black-tailed prairie dog complex is redefined to include some of the colonies east of the river, however, the percentage of the complex east of the river would undoubtedly be very small (ICC, 1992). Nevertheless, TRRC would survey the final approved TRRC Extension route for the location and size of prairie dog colonies that might be affected by construction and operation of the rail line, and, if appropriate, survey applicable colonies for the presence of black-footed ferrets (ICC, 1992).

Peregrine falcon

Peregrine falcons could occur along the Tongue River as migrants (Palawski, 1989). There have been occasional sightings along the valley (ICC, 1992; USFWS, 1992). It is reasonable to assume that the north-south orientation of the valley, as well as the presence of a prey base (primarily medium-sized birds such as waterfowl, shorebirds, and rock doves) associated with the river, could attract falcons during migration.

However, there are no known peregrine falcon eyries along the river, including the segment of the river drainage potentially affected by the TRRC Extension (ICC, 1992). A survey of potential peregrine falcon nesting habitat along a portion of the Tongue River adjacent to the TRRC Extension route (Sumner, 1979) concluded that while the prey base was sufficient to support peregrine falcons, nesting habitat (cliffs) was only adequate. More suitable nesting habitat is widely available in Montana and until the peregrine falcon becomes more common, it appears unlikely that it would nest in this area (Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and

Parks, pers. comm. quoted in USFWS, 1992). No suitable nesting cliffs would be disturbed by construction or operation of the TRRC Extension.

Bald eagle

Since the late 1970's, the bald eagle has substantially increased its nesting distribution and numbers. Consequently, in summer 1994 the USFWS released a proposed rule to downlist the bald eagle from endangered to threatened in 45 of the 48 contiguous United States, including Montana (Lori Nordstrom, biologist, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, personal communication, October 11, 1994). The USFWS has one year to review its proposal; therefore, the USFWS will announce in summer 1995 whether it has decided to downlist the bald eagle (Lori Nordstrom, biologist, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, personal communication, June 12, 1995).

Bald eagles occur along the Tongue River as migrants and winter residents. They forage on fish, waterfowl, carrion, etc. During migration as many as 50 bald eagles have been counted along the Tongue River from Miles City to the upper end of the Tongue River Reservoir (Farmer, 1992).

The value of the river immediately below the Tongue River Dam to attract migrant and wintering bald eagles has been recognized (e.g., Lockhart and McEneaney, 1978). It is estimated that an average 10-15 bald eagles winter along the river below the dam (USFWS, 1992).

In the mid-1980's, a pair of bald eagles exhibited pair-bonding activity near a nest (for the purposes of this Biological Assessment, this nest will be referred to as Nest 01) in a cottonwood tree along the Tongue River about 2.5 miles below the dam (Figure

1). No egg-laying occurred and in subsequent years this nest was used by golden eagles (USFWS, 1992).

In spring 1992 a pair of bald eagles established a nest (Nest 02, Figure 1) in a cottonwood tree about eight miles downstream from the dam (Harms, 1992). In the past few years Nests 01 and 02 were apparently used interchangeably by the same pair of bald eagles (Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, personal communication, November 7, 1994). In spring 1994 Nest 01 was occupied by bald eagles but was destroyed in a windstorm; Nest 02 was not occupied. It was expected that there would be a good probability that these bald eagles would construct a new nest somewhere downstream from the dam, or would reoccupy Nest 02 (Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, personal communication, November 7, 1994). It appears that this assumption was correct, as a great blue heron nest about two miles downstream from the dam was occupied in March 1995; this new nest will be referred to as Nest 03.

Another pair of bald eagles was observed in the vicinity of Nest 02 in March 1995. Nest 02 may have also been destroyed, as it could not be located in March 1995 (John Berry, biologist, Kiewit Mining Group, Sheridan, Wyoming, personal communication, May 1, 1995). This second bald eagle pair therefore apparently does not have a nest but may yet build one (Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, personal communication, April 11, 1995).

Loss of bald eagle nests is not uncommon. In Montana, an average of seven percent (range 3-15 percent) of all bald eagle nests are lost each year; the continent-wide nest turnover rate is also seven percent (range 5-20 percent). Thus, while certain nests may remain active for many years, it is not unusual for the location of a nest site within a bald eagle nesting territory to change (Dennis Flath, Nongame Coordinator, personal communication, May 17, 1995).

In addition to the nests in the vicinity of the TRRC Extension, bald eagles have also successfully nested along the Tongue River upstream from the Tongue River Reservoir (Phillips et al., 1990) and downstream between Ashland and Miles City (ICC, 1992). Both these nests are also in cottonwood trees.

Bald eagles were analyzed in the DEIS for the Tongue River Dam rehabilitation project (Bureau of Reclamation et al., 1995). Using similar mitigation measures to those proposed in this Biological Assessment, this DEIS concluded that there would be no adverse effects to the bald eagle.

Pallid sturgeon

The pallid sturgeon lives exclusively in the Missouri River, the lower Yellowstone River, and the Mississippi River below its confluence with the Missouri River. Much of its historical range has been altered by human activities: 51 percent has been channelized, 28 percent impounded and 21 percent affected by upstream impoundments which alter flow and temperature regimes (Clancy, 1991).

Historically, the pallid sturgeon was present at the mouth of the Tongue River and in the nearby Yellowstone River. From 1950 to 1991, however, there were no documented records of pallid sturgeon above the Intake Diversion (USFWS, 1992). As part of the environmental studies for the Tongue River Dam Rehabilitation Project, the U.S. Bureau of Reclamation (USBR) contracted with MDFWP to survey the Yellowstone River from the Intake Dam to Cartersville Diversion Dam upstream from Miles City, which was considered to be a total block for pallid sturgeon migrating past the Intake Diversion. A single pallid sturgeon was captured in July, 1991, demonstrating that the pallid sturgeon has not been extirpated from the Yellowstone River above the Intake Diversion and may still reach the mouth of the Tongue River (USFWS, 1992).

Although the ecology of this fish is not well understood, it apparently requires large, turbid, free-flowing rivers with rocky or sandy streambeds. Pallid sturgeon often feed in turbid water because they capture prey by feeling vibrations and movements with their barbels. The pallid sturgeon spawns infrequently, apparently because of the comparatively low occurrence of appropriate spawning temperature and substrate conditions. The pallid sturgeon has only a two-week spawning "window" when the stream flow, day length and water temperature are suitable. Water must be highly oxygenated at a temperature of 68-70°F before the fish will spawn. In addition to appropriate water temperatures, the pallid sturgeon spawns where the current is swift, over a hard stream bottom (e.g., gravel, hard clay or rock), often where a tributary enters the main stream. The sturgeon deposits eggs at these sites, which then adhere to the bottom. Therefore, shifting bedloads and sediment may be extremely detrimental, even in otherwise turbid water.

Appropriate spawning habitat is available at the mouth of the Tongue River (USFWS, 1992). If spawning habitat for pallid sturgeon is considered to be identical to that of the closely related shovelnose sturgeon (the two species are known to hybridize), then it is possible that pallid sturgeon could extend 20 miles up the Tongue River (USFWS, 1992). However, this area is still far downstream from the TRRC Extension route.

METHODS

As discussed earlier, the information for this Biological Assessment was collected from late 1989 through June, 1995. Collection methods included: 1) review of existing literature; 2) contact with knowledgeable parties; and 3) field inventories for bald eagle nests.

There was comparatively little available literature (technical reports or other publications) regarding endangered or threatened species in or near the TRRC Extension route. Wildlife inventory reports from active or proposed coal mines along the route were reviewed, as was the Fish and Wildlife Coordination Act Report for the Tongue River Dam Rehabilitation Project (USFWS, 1992). Much of this information was already summarized in the TRRC Extension DEIS (ICC, 1992). Updates to the 1992 information base were provided by review of correspondence between USFWS, ICC, MDFWP, HRA and other consultants, etc. In addition, the DEIS for the Tongue River Basin Project (i.e., the Tongue River Dam rehabilitation project) was released in June, 1995. All citations used in this Biological Assessment are included in LITERATURE CITED.

Contacts with knowledgeable parties ranged from HRA's discussions with landowners along the route in 1990 and 1992, to contacts with USFWS, MDFWP, MBEWG, mining company and consultant biologists at various dates from 1990 through early 1995. Some of these communications were cited in the TRRC DEIS (ICC, 1992). All personal communications cited in this Biological Assessment were included in the text.

Field inventories for wintering and nesting bald eagles along parts of the TRRC Extension route near operating or proposed coal mines have been conducted sporadically since the mid 1970's (e.g., Lockhart and McEneaney, 1978; annual wildlife monitoring reports from the Montco, Decker and Spring Creek mines; etc.). Information from these surveys was summarized in the TRRC Extension DEIS (ICC, 1992), and the Fish and Wildlife Coordination Act Report for the Tongue River Dam Rehabilitation Project (USFWS, 1992). Inventories specific to the TRRC Extension route were conducted in February and April, 1992. For each survey, the Tongue River valley from Miles City to the upper end of the Tongue River Reservoir was flown at low altitude and low air speed in a Piper SuperCub. All wintering, migrant or nesting eagles were counted, and deciduous forest along the river was searched for nests that could be potentially used by bald eagles (Farmer, 1992). Results were reported to MDFWP and USFWS. After 1992, monitoring of active bald eagle nests along the Tongue River has been conducted by MDFWP, BLM and coal mining companies (Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, personal communication, November 7, 1994). In addition, the Nest 03 vicinity was visited as part of the preparation of the Biological Assessment on April 21, 1995.

ANALYSIS OF EFFECTS; PROPOSED MITIGATION MEASURES

Black-footed ferret

The black-footed ferret is not known to occur in the vicinity of the TRRC Extension route. If no ferrets are present, construction and operation of the TRRC Extension would not affect this species. If ferrets are present, effects could include mortality (e.g., ferrets could be killed by equipment during construction or by trains during operation of the TRRC Extension) and displacement from disturbed habitat (due to fires, dust, noise, accidental fuel spills, etc.).

Since critical habitat for the black-footed ferret is prairie dog colonies, effects of construction and operation of the TRRC Extension on prairie dogs could potentially affect the black-footed ferret. The primary impact of the TRRC Extension would be the disturbance of existing black-tailed prairie dog colonies during construction of the rail line. Some prairie dogs might be killed by construction activities. Displacement of prairie dogs away from construction activity could also occur, but would be short-term because undisturbed burrows would likely be reoccupied shortly after human activity had ceased.

Other potential effects to prairie dogs would include mortality from trains, or effects from fires, dust, potential fuel spills, or other rail line accidents. Such effects would be short-term and would be limited to comparatively small areas and numbers of prairie dogs. They would not affect local or regional populations of prairie dogs.

It is not expected that landowner attitudes towards prairie dogs would change as a result of the construction and operation of the TRRC Extension. Thus, ranchers would be expected to periodically continue to control prairie dogs on their property.

Reasonably foreseeable related and unrelated actions and cumulative effects would include: 1) assuming construction of the already approved rail line from Miles City to Ashland, the development of 2-3 coal mines in the Ashland area could potentially affect other existing prairie dog colonies, as could construction of the rail line itself. These direct and indirect impacts would be similar to those for the TRRC Extension; 2) recreational hunting of prairie dogs might increase as an indirect effect of the increasing human population in the region. However, the intensity of recreational hunting would depend on private landowner permission and cooperation; and 3) the Tongue River Dam Rehabilitation Project and its proposed mitigation measures might affect two or more small prairie dog colonies (USFWS, 1992).

At present, the number, location and size of active prairie dog colonies that would be disturbed by the TRRC Extension have not be identified. However, TRRC will inventory the route during final engineering (ICC, 1992). The USFWS (Harms, 1992) has expressed concern that some prairie dog colonies that might be disturbed by the TRRC Extension on the east side of the Tongue River, could be part of a large prairie dog colony complex previously identified on the west side of the river. Consequently, this inventory will also be used to determine if colonies on the east side of the river are part of this larger complex (as measured by USFWS, 1989 criteria).

Following the inventory, but during the year prior to construction, all active prairie dog colonies that would be directly disturbed by construction of the TRRC Extension would be surveyed for the presence of black-footed ferrets. Colonies smaller than 80 acres would be qualitatively examined. Colonies larger than 80 acres would be surveyed using USFWS (1989) guidelines.

Active prairie dog colonies that would not be directly disturbed would not be surveyed because: 1) there are no recent records of the black-footed ferret in the vicinity of the TRRC Extension route; 2) on non-Native American lands, prairie dog colonies that would be directly affected by the rail line, as well as neighboring colonies, were historically controlled by landowners. This management policy resulted in generally small, somewhat isolated colonies that have not been consistently large enough (1,000 acres or greater) to support ferrets. Assuming no changes in landowner attitudes, it is unlikely that prairie dog complexes on non-Native American lands would develop to or remain stable at sufficient size to support a ferret population; and 3) even if prairie dog colonies on non-Native American lands east of the Tongue River (including colonies that would be directly affected by the TRRC Extension) were determined to be part of the large prairie dog complex on Native American lands west of the river (the Northern Cheyenne complex), these colonies have been under a management policy which discourages occupancy by black-footed ferrets. In contrast, the Northern Cheyenne complex is of sufficient size (10,000 acres) to support black-footed ferrets <u>without</u> the inclusion of colonies east of the river (ICC, 1992). Therefore it is reasonable to assume that disturbance of prairie dog colonies east of the river (marginal black-footed ferret habitat) by construction of the TRRC Extension, would not affect black-footed ferret use of the Northern Cheyenne prairie dog complex west of the river.

If black-footed ferrets are found in the prairie dog colonies to be directly affected by the TRRC Extension, TRRC would immediately notify the ICC and the USFWS. The three parties would confer to determine appropriate means to mitigate the effects of construction and operation of the TRRC Extension on the black-footed ferret.

<u>Peregrine falcon</u>

Since the peregrine falcon does not nest along the TRRC Extension route, and because nesting habitat along the route is only of moderate quality, construction and operation of the TRRC Extension would not affect critical peregrine falcon nesting habitat. Migratory peregrine falcons would not be directly affected by construction and operation of the TRRC Extension, but could be indirectly affected if prey species such as waterfowl were temporarily displaced from the river by passing trains. However, this impact would be very short term and would not have a significant effect on either waterfowl or peregrine falcon use of the Tongue River valley.

Reasonably foreseeable related and unrelated actions and cumulative effects would include: 1) assuming construction of the already approved rail line from Miles City to Ashland, the development of 2-3 coal mines in the Ashland area would not affect peregrine falcons, since no nesting sites (cliffs) have been identified which would be disturbed (Sumner, 1979; ICC, 1992); 2) an increasing human population in the region could result in accidental mortalities or displacement of migratory peregrine falcons, but this impact would be expected to be minor; and 3) if the Tongue River Dam Rehabilitation Project affects flows in the Tongue River, it could affect use of the river by prey species such as waterfowl and shorebirds. Similarly, changes in the reservoir level beyond those normally occurring during present operation, could also affect prey availability. However, these changes would be short-term and would have no long-term effects on migratory peregrine falcons.

Because the peregrine falcon would experience no significant adverse impacts as a result of the construction and operation of the TRRC Extension, no mitigating measures are proposed.

<u>Bald eagle</u>

The <u>Montana Bald Eagle Management Plan</u> (MBEWG, 1994) summarized the reaction of bald eagles to human activities as:

Bald eagles are sensitive to a variety of recreational, research, resource and urban development activities. Responses of eagles may vary from ephemeral, temporal and spatial avoidance of activity to total reproductive failure and abandonment of breeding areas. Less adequately documented is that bald eagles also tolerate apparently significant disturbances. Relationships of human activity and eagle responses are highly complex, difficult to quantify, and often site-specific. Responses vary depending on type, intensity, duration, timing, predictability and location of human activity. The way in which these variables interact depends on age, gender, physiological condition, sensitivity, residency and mated status of affected eagles. Prey base, season, weather, geographic area, topography and vegetation in the vicinity of activities and eagles (plus other variables probably unperceived by humans) also influence eagle responses. Cumulative effects of many seemingly insignificant or sequential activities may result in disruption of normal behavior. Lack of experimental data (due to endangered/threatened status) limits quantification of response to empirical evidence, but general trends in eagle responses (or lack thereof) to human activity are becoming evident to field researchers and managers, although somewhat subjectively. Clearly, some bald eagles are more tolerant of human activity than others. Tolerance threshold is usually site, pair, and activity specific and a function of type, intensity, and proximity of disturbance over exposure time. However, it is becoming apparent that there are "urban" and "rural" eagles. Urban eagles may be more tolerant of certain human activities than their rural counterparts because they have been or are exposed to more human activity at gradually increasing levels while rural eagles' exposure is abrupt.

The Montana Bald Eagle Management Plan (MBEWG 1994) defined disturbance, as used above, to be "any human elicited response that induces a behavioral or physiological change in a bald eagle contradictory to those that facilitate survival and reproduction. Disturbance may include elevated heart or respiratory rate, flushing from a perch or events that cause a bald eagle to avoid an area or nest site."

Based on the above descriptions, it is reasonable to assume that bald eagles nesting along the Tongue River in the vicinity of the TRRC Extension would be accustomed to some level of disturbance related to use of the county road (which passes within 800 feet of Nest 01 (Figure 2), within 200 feet of Nest 03 (Figures 3 and 5), and within 1/2-mile of Nest 02 (Figure 4)), residences, agricultural activities such as hay production and feeding livestock, and limited recreational use of the Tongue River.

Construction

In compliance with applicable Federal statutes, no known bald eagle nests would be destroyed by construction of the TRRC Extension. Construction of the rail line would disturb only about one acre of deciduous tree/shrub habitat (ICC, 1992). Therefore the impact to potential nesting or roosting habitat would be insignificant.

The greatest potential impact of construction of the TRRC Extension near an active bald eagle nest during the nesting season could be increased stress to the pair (included within the definition of "disturbance"), which could result in nest abandonment or failure. Construction activities might also displace certain kinds of prey, such as waterfowl and other birds, along the route; such displacement would be localized and short-term. Other types of prey, including fish, would not be significantly affected.

The TRRC Extension would pass within about 3/4-mile of Nest 01, 1/4-mile of Nest 03 and about 1/2-mile of Nest 02 (Figures 2-4). As discussed earlier, Nest 01 was destroyed by a windstorm in 1994, and Nest 02 was probably destroyed. Since bald eagles usually rebuild destroyed nests, often in the same or a nearby stand of trees, the Montana Bald Eagle Management Plan (MBEWG, 1994) requires that such sites be considered occupied for five years after the last recorded activity of breeding bald eagles.

Construction of the TRRC Extension could displace migrant or non-nesting bald eagles from portions of the Tongue River valley, and also displace certain types of prey. This effect would be short-term and would occur only during the construction season (probably April through October). Therefore wintering bald eagles would not be affected by construction of the TRRC Extension.

Fig. 2. Bald eagle management zones in relation to the TRRC Extension route, bald eagle nest 01.

Fig. 3. Bald eagle management zones in relation to the TRRC Extension route, bald eagle Nest 03.

Fig. 4. Bald eagle management zones in relation to the TRRC Extension route, bald eagle Nest 02.

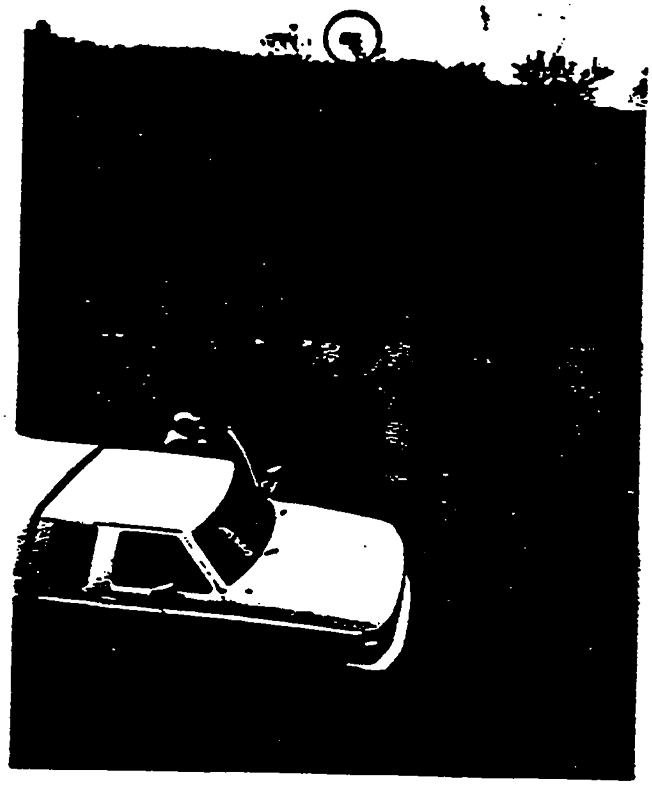


Fig. 5. Bald eagle Nest 03 from county road, April, 1995.

Fig. 6. Approximate route of TRRC Extension in relation to Nest 03.

Indirect effects from construction would be related to the presence of the construction force, and would potentially include: 1) displacement as a result of increased recreation (e.g., fishing, hunting, hiking, camping, wildlife observation) in the river valley. At present, recreational access to the valley is restricted by private landowners. This situation is not expected to change as a result of the construction and operation of the TRRC Extension; 2) mortalities of bald eagles from vehicles along access roads to the TRRC Extension route, particularly if bald eagles were attracted to these roads by the presence of carrion such as vehicle-killed deer (USFWS, 1986); and 3) an increased potential for illegal killing of bald eagles as a result of increased numbers of people in the area.

<u>Operation</u>

Nest 01 was within 1/4-mile of a county road and within 1/2-mile of an occupied residence, and was adjacent to active ranching activities such as cattle grazing and hay production. Nest 03 is within 200 feet of a county road (Figures 5 and 6) and within 1/2-mile of an occupied residence, and is also adjacent to active ranching activities. Nest 02 was also within 1/2-mile of a county road and was adjacent to active ranching activities. Therefore the bald eagles that use these nest sites (it is believed the pair from Nest 01 occupied Nest 03; John Berry, biologist, Kiewit Mining Group, Sheridan, Wyoming, personal communication, April 20, 1995) are habituated to some level of human activity near their nests, even during the peak of nesting season. It is reasonable to assume they will remain habituated to some level of human activity.

Rail line maintenance activities near active bald eagle nests could result in short-term displacement of eagles. The magnitude of this impact is impossible to predict because: 1) whether or not a maintenance activity would be required near an active eagle nest during the nesting season is not predictable; and 2) the kind of maintenance activity could influence the magnitude of the effect. For example, extensive replacement of rails could have more effect than a normal rail inspection, since more workers and equipment would be needed for a longer time in the vicinity of the nest.

According to the Montana Bald Eagle Management Plan (MBEWG, 1994), the presence and abundance of food usually associated with open water, availability and distribution of foraging perches, availability of secure night roost sites and freedom from human harassment dictate the amount and extent of bald eagle use of specific wintering grounds. As discussed earlier, displacement of prey by train operation or rail line maintenance activities would be localized and short-term. According to the Montana Bald Eagle Management Plan (MBEWG, 1994) "...roost sites are usually located in stands of mature or oldgrowth conifers or cottonwoods. For purposes of management, a communal roost is defined as an area usually less than 10 acres in size that contains $\geq$ 6 bald eagles on any given night..." Since only about one acre of deciduous tree/shrub habitat would be disturbed by construction of the TRRC Extension (ICC, 1992), it is unlikely that such a roost would be affected. Therefore the greatest potential impacts to wintering bald eagles would be disturbance and/or mortality (by trains) of eagles feeding on carcasses of train-killed deer or other animals (USFWS, 1986).

According to the Montana Bald Eagle Management Plan (MBEWG, 1994), risks to migrant bald eagles mostly involve: 1) exposure to lead poisoning; 2) secondary poisoning from insect and predator control programs; 3) collisions and electrocutions associated with power transmission; and 4) loss of perching, foraging and roosting opportunities due to human disturbance. The first three impacts are not applicable to the TRRC Extension, and (as discussed earlier) the fourth would be limited and short-term.

Individual bald eagles exhibit different behavioral reactions to disturbances (MBEWG, 1994). Some may be extremely tolerant, while others may be intolerant of disturbance. "Tolerant" migrant or wintering bald eagles would not be significantly affected by operation of the TRRC Extension. Maintenance activities during winter might result in short-term displacement of less tolerant individuals, but this effect would be localized and would not extend to the entire route.

Related and unrelated actions, and cumulative effects

Reasonably foreseeable related and unrelated actions, and cumulative effects would include: 1) assuming construction of the already approved rail line from Miles City to Ashland, other bald eagle nests along the Tongue River could experience effects similar to those of the TRRC Extension. As noted earlier, there is only one known bald eagle nest in the vicinity of this route; 2) development of 2-3 coal mines in the Ashland area would not affect bald eagles, since no nesting sites have been identified which would be disturbed; 3) an increasing human population in the region could result in displacement, accidental mortalities, or increased illegal killing of bald eagles; and 4) if the Tongue River Dam Rehabilitation Project interrupts flows in the Tongue River or radically changes water levels in the Tongue River Reservoir, it could affect use of these waters by prey species such as waterfowl and shorebirds.

Mitigation during construction

The Montana Bald Eagle Management Plan (MBEWG, 1994) defined Nest Site Management Zones for human activity in the vicinity of bald eagle nests. Detailed descriptions of Management Zones, and guidelines for human activity within them, are given in Appendix II. For the purposes of this Biological Assessment, Management Zone 1 includes the area within 1/4-mile of the nest site. The TRRC Extension route does not intrude in Management Zone 1 for either Nest 01 or 02 (Figures 2 and 4), but does intrude in Management Zone 1 for Nest 03 (Figure 3).

According to the guidelines for human activity within Management Zone 1, once an active nest has been located, Management Zone 1 "applies only to the active nest"

(Appendix II). If it is assumed that Nests 01 and 03 have been occupied by the same pair of bald eagles (John Berry, biologist, Kiewit Mining Group, Sheridan, Wyoming, personal communication, April 20, 1995), then there no longer is a Management Zone I around Nest 01.

For the purposes of this Biological Assessment, Management Zone 2 is considered the primary use area for nesting bald eagles and comprises the area between Zone 1 (1/4-mile from the nest site) and 1/2-mile from the nest site. The TRRC Extension route does not intrude in Management Zone 2 for Nest 01 (Figure 2), but does intrude in Management Zone 2 for Nests 03 and 02 (Figures 3 and 4, respectively). However, as with Management Zone 1, once an active nest has been located, Management Zone 2 applies only to the active nest (Appendix II). Therefore there is no Management Zone 2 for Nest 01.

Management Zone 3 represents most of a home range used by bald eagles during a nesting season, and extends to a radius of 2.5 miles from the nest site. Zone 3 overlaps about 5.1 miles of the TRRC Extension route near Nest 01, about 4.5 miles of the route near Nest 03, and about 6.1 miles of the route near Nest 02 (Figures 2, 3 and 4, respectively).

The Nest 03 vicinity was visited on April 21, 1995. The nest is located in a cottonwood tree whose base is approximately 3340 feet in elevation, as estimated from USGS 7-1/2 minute topographic maps. The nest was estimated to be about 70 feet above the ground, or approximately 3410 feet in elevation. A series of photos and map notes were made from the county road in Management Zones 1, 2 and 3; these, in turn, were used to estimate the limits of observability from the nest itself. It was estimated that a bald eagle in Nest 03 would be able to see approximately 600 feet of the TRRC Extension route through Management Zone 1, 1320 feet of the route through Management Zone 2, and 4600-8800 feet (depending on the final configuration of the route, as well as the true visibility from the nest) of the route through Management Zone 3 (Figure 6). Due to the position of the nest near a bluff, none of the route north or northwest of the nest would be visible from the nest. However, adult bald eagles soaring above the nest, defending their territory, would be able to see the rail line for several miles in either direction.

The bald eagle nesting period (encompassing courtship, nest building, egg laying, incubation, hatching and rearing young, and fledging) extends from February 1-August 15 (MBEWG, 1994). Therefore the TRRC Extension construction period would overlap the bald eagle nesting period. To mitigate effects of construction on nesting bald eagles, the following monitoring plan would be instituted:

- In the year prior to construction of the TRRC Extension, TRRC will survey the Tongue River valley along the Extension route for the presence of nesting bald eagles. Any active or inactive bald eagle nests will be reported immediately to the USFWS and MBEWG. Assuming access to a nest site is available, the ground below active nests will be surveyed during the post fledging period for evidence revealing the food habits of the eagles at this site. Such information might be useful in defining the threshold limits discussed below.

- A program to monitor each active nest will be developed through on-site consultation with the USFWS and/or MBEWG. The primary objective of monitoring would be to determine if approaching construction activities have a negative effect on nesting bald eagles. USFWS and/or MBEWG consultation would be expected to define, on a nest-by-nest basis, the kind and amount of overt disturbance behavior exhibited by nesting bald eagles that would indicate that construction activities should be halted (henceforth called "threshold behavior"). It is expected that parameters influencing the determination of threshold behavior would include, but not be limited to, location of the nest in relation to the TRRC Extension route, distance from other human disturbances such as the county road, and known history of the nesting birds. It is expected that the threshold behavior value would vary, depending on the time of the nesting period (e.g., egg laying vs. rearing).

- Persons assigned to monitor active bald eagle nests (henceforth called "environmental inspectors") would have the authority to immediately halt TRRC Extension construction activities in the vicinity of an active nest when the threshold behavior is exhibited by the nesting birds. This authority would be granted as part of contract specifications between TRRC and the construction contractor. The environmental inspector would notify the on-site construction supervisor that construction activities must cease. The on-site construction supervisor would be responsible for notifying construction crews to cease activities in the vicinity of the nest.

- In the event of a construction halt, the environmental inspector would notify USFWS and/or MBEWG. USFWS and/or MBEWG would evaluate the situation and make a recommendation to halt construction activities until a later date, proceed with certain kinds of activities, etc.

Within the framework of the above monitoring plan, the following TRRC Extension construction activities could occur:

- There would be no construction activities within Management Zones 1 and 2 at any active bald eagle nest during the nesting period (February 1 - August 15, or until five days after the first observation of independent flight).
- Low intensity activities, such as surveying, could occur in Management Zone 3 beyond line of sight of any active nest from February 1 to May 1 (i.e., courtship through initiation of hatching). High intensity activities (heavy equipment operation, grading, etc.) would not occur in Management Zone 3 around any active nest during this period.
- Once monitoring confirms that hatching has occurred (any time after May 1), low intensity activities could occur anywhere within Zone 3 of any active nest. High intensity activities would be confined to those portions of Management Zone 3 beyond line of sight of an active nest.
- Once monitoring confirms that fledging has occurred (i.e., five days following the first observation of independent flight), high intensity activities could occur anywhere within Management Zones 1, 2 and 3.

It is anticipated this monitoring effort would extend until five days following the first observation of independent flight by the fledglings. At that time, monitoring would end. Thus, monitoring would extend at least through June 15, and usually no later than August 15.

Mitigation during operation

The following measures would be implemented during operation of the TRRC Extension:

- Rail line maintenance activities would fall into two general categories. The first would be comprised of non-emergency or planned activities, and would not take place in Management Zones 1 or 2 from February 1 through May 15. After May 15 until the first observation of independent flight of the fledglings (usually no later than August 15), these activities could occur in the afternoons. By afternoon, adult eagles have usually completed feeding the chicks and there would be minimal disruption of this activity.

  Certain planned maintenance activities, such as routine inspections of the rail line, would necessarily have to occur during the February 1 - May 15 period. However, these activities would be expected to be short-term and low intensity, and would be anticipated to have minimal effects to bald eagles.

  The second category of maintenance activity would be emergency maintenance or repairs. Such activities cannot be foreseen and therefore cannot be planned to occur in periods that would minimize the effect to nesting bald eagles. The degree of effect to nesting bald eagles would be influenced by the magnitude of the activity, the time of the nesting season at which the activity occurs, and the tolerance for disturbance displayed of the affected bald eagles. TRRC would notify USFWS as soon as reasonably possible of an emergency maintenance activity within Management Zones 1 or 2 around an active bald eagle nest.

- In consultation with the MBEWG, TRRC could identify one or more tracts of land along the Tongue River for purchase for management as potential bald eagle nesting habitat. Criteria that could be used to select such tracts would include but not be limited to: 1) location near irrigation dams, natural riffle/run sequences, etc. that would concentrate prey (fish), particularly in reaches of the river where naturally occurring turbidity might otherwise limit observability of fish; 2) location in areas that would be "cut off" by construction of the railroad. This would have two advantages: a) landowners who would otherwise have difficulty accessing these sites for agricultural management due to the railroad, might be receptive to selling such sites for wildlife management purposes; and b) isolating such sites with the railroad grade from other human disturbances might improve their attractiveness for less tolerant bald eagle pairs; and 3) presence of appropriately sized and aged stands of cottonwoods that would be available, or would have the potential to eventually develop as nest sites for bald eagles. Montana Riparian-Wetland Association criteria (Hansen et al., 1995), or other appropriate methodology, would be used to inventory these sites.

Once a tract has been purchased, it could be managed as potential bald eagle nesting habitat by measures such as: 1) the site could be fenced to exclude livestock, which would aid regeneration of cottonwoods and understory species; and 2) through consultation with the MBEWG and/or groups such as the Montana Riparian-Wetland Association, more intensive management steps such as planting cottonwoods, could be undertaken if necessary to enhance the site as future nesting habitat.

- TRRC employees engaged in routine inspection of the rail line (a minimum of two times per week) would remove train-killed deer or other large animals from the right-of-way, in order to protect migrant of wintering bald eagles feeding on such carrion, from mortalities by trains. Carrion would either be completely removed from the vicinity of the rail line, or would be placed at locations along or near the right-of-way where there would be no potential for mortalities from trains, per objective 1.3123 of the Pacific Bald Eagle Recovery Plan (USFWS, 1986).

- TRRC would prohibit trapping within its ROW. This measure would ensure that bald eagles are not accidentally caught in traps set for other animals.

Pallid sturgeon

Since the pallid sturgeon is not known to occur, nor is appropriate spawning habitat available, in the reach of the Tongue River potentially affected by construction and operation of the TRRC Extension, there should be no direct effect to this species.

Indirect effects of construction and operation of the TRRC Extension could include additional sediment loads at rail line stream crossings during construction. This effect will be insignificant compared to normal sediment loads in the Tongue River, particularly since potential occupied pallid sturgeon habitat is far downstream from the TRRC Extension. Effects such as accidental fuel spills into the Tongue River, could affect water quality and influence spawning success of pallid sturgeon in the lower Tongue River and Yellowstone River. However, these impacts would be likely be controlled by TRRC's spill control efforts, prior to their intrusion into pallid sturgeon spawning habitat.

Reasonably foreseeable related and unrelated actions, and cumulative effects would include: 1) assuming construction of the already approved rail line from Miles City to Ashland, pallid sturgeon spawning habitat in the lower Tongue River could experience effects from construction and operation of this rail line. For the most part, however, this rail line would be located at a sufficient distance from the river to minimize these impacts; 2) development of 2-3 coal mines in the Ashland area would not affect pallid sturgeon, since they do not spawn in this vicinity and all proposed mines would not directly affect the Tongue River; 3) an increasing human population in the region could result in additional captures of pallid sturgeon by recreational fishermen, particularly near the mouth of the Tongue River. An appropriate information/education campaign employed at public fishing accesses would minimize this loss; and 4) if the Tongue River Dam Rehabilitation Project interrupts flows in the Tongue River, it could affect pallid sturgeon spawning in the lower Tongue River or the Yellowstone River near the confluence of the Tongue River. Since this effect would be relatively short-term, there would be no permanent or long-term effect to pallid sturgeon use or spawning of these river reaches.

DETERMINATION OF EFFECT

Based on the above information and proposed mitigation measures, this Biological Assessment concludes that:

- Construction and operation of the TRRC Extension is not likely to adversely affect the pallid sturgeon.
- Construction and operation of the TRRC Extension is not likely to adversely affect the peregrine falcon.
- Construction and operation of the TRRC Extension, if the proposed mitigation measures are applied, is not likely to adversely affect the black-footed ferret.
- Construction and operation of the TRRC Extension, if the proposed mitigation measures are applied, is not likely to adversely affect the bald eagle.

If mitigation measures are employed as proposed, construction and operation of the TRRC Extension will have no short-term or long-term effect on any of the listed species discussed above.

LITERATURE CITED

Biggins, D.E., B.J. Miller, L.R. Hanebury, B. Oakleaf, A.H. Farmer, R. Crete and A. Dood. 1993. A technique for evaluating black-footed ferret habitat. In J. L. Oldemeyer, D.E. Biggins, B.J. Miller and R. Crete (eds.). Proceedings of the symposium on the management of prairie dog complexes for the reintroduction of the black-footed ferret. U.S. Fish and Wildl. Serv. Biol. Rep. 13, Washington, D.C.

Biggins, D.E., M. Schroeder, S. Forrest and L. Richardson. 1985. Movements and habitat use of radio-tagged black-footed ferrets. In S.H. Anderson and D.B. Inkley (eds.). Black-footed ferret workshop proceedings. Wyoming Game and Fish Dept., Cheyenne.

Clancy, P. 1991. Dinosaurs of the deep. Montana Outdoors 23(2):19-22.

Elser, A.A., R.C. McFarland and D. Schwehr. 1977. The effect of altered streamflow on fish of the Yellowstone and Tongue Rivers, Montana. Old West Reg. Comm. Rep. No. 8, Yellowstone Impact Study.

Farmer, P.J., biologist, Western Technology and Engineering, Inc. February 23, 1992. Letter to Alan Newell, Historical Research Associates, Inc.

GeoResearch, Inc. 1991. Northern Cheyenne Tribe prairie dog management plan. Northern Cheyenne Tribe, Lame Deer, Montana.

Hansen, P.L., R.D. Pfister, K. Boggs, B.J Cook, J. Joy and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Univ. Montana School of For., Montana For. and Conserv. Exp. Sta., Misc. Publ. No. 54.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, fish and Wildlife Enhancement. August 29, 1991. Letter to E.K. Kaiser, chief, Section of Energy and Environment, Interstate Commerce Commission.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. December 24, 1991. Letter to E.K. Kaiser, chief, Section of Energy and Environment, Interstate Commerce Commission.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. April 28, 1992. Letter to N. Stessman, acting regional director, U.S. Bureau of Reclamation, Billings, Montana.

Hillman, C.N. and T.W. Clark. 1980. *Mustela nigripes*. Mammalian Species 126.

Interstate Commerce Commission. 1992. Draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Energy and Environ., Washington, D.C.

Interstate Commerce Commission. 1994. Supplement to draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Environ. Anal., Washington, D.C.

Kaiser, E.K., chief, Section of Energy and Environment, Interstate Commerce Commission. January 23, 1990. Letter to Alan Newell, Historical Research Associates, Inc., Missoula, Montana.

Lockhart, J.M. and T.P. McEneaney. 1978. The effects of coal development on the ecology of birds of prey in southeastern Montana and northern Wyoming. U.S. Fish and Wildl. Serv., Denver Res. Center, Sheridan, Wyoming field sta.

McMaster, K.M., field supervisor, Montana field office, U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana. November 10, 1994. Letter to Alan Newell, Historical Research Associates, Inc.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

Newell, A., Historical Research Associates, Inc. December 17, 1991. Letter to D. White, Section of Energy and Environment, Interstate Commerce Commission.

Palawski, D. for K. McMaster, field supervisor, Montana office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. December 28, 1989. Letter to Dana White, Section of Energy and Environment, Interstate Commerce Commission.

Phillips, R.L., A.H. Wheeler, J.M. Lockhart, T.P. McEneaney and N.C. Forrester. 1990. Nesting ecology of golden eagles and other raptors in southeastern Montana and northern Wyoming. U.S. Fish and Wildl. Serv., Fish and Wildl. Tech. Rep. 26, Washington, D.C.

Sumner, J. 1979. Montco peregrine falcon survey. Tech. rep. for Montco.

USDI Bureau of Reclamation, Northern Cheyenne Tribe and Montana Department of Natural Resources and Conservation. 1995. Tongue River Basin Project Draft Environmental Impact Statement.

U.S. Fish and Wildlife Service. 1986. Recovery Plan for the Pacific bald eagle. U.S. Fish and Wildl. Serv., Portland, Oregon.

U.S. Fish and Wildlife Service. 1989. Black-footed ferret survey guidelines for compliance with the Endangered Species Act. U.S. Fish and Wildl. Serv., Denver, Colorado.

U.S. Fish and Wildlife Service. 1992. Fish and Wildlife Coordination Act report for the Tongue River Dam rehabilitation project. Montana state office, Helena.

Appendix I. Letter from Dennis Flath, Nongame Coordinator, Montana Department of Fish, Wildlife and Parks, May 17, 1995.

Montana Department of Fish, Wildlife & Parks

FWP Bldg., MSU Campus
Bozeman, MT 59717-0322

May 17, 1995

Patrick Farmer
WESTECH
P.O. Box 6045
3005 Airport Road
Helena, MT 59604

Dear Pat,

Thanks for the opportunity to review the draft Biological Assessment for the Tongue River Railroad Extension. Hopefully my comments will be useful in preparation of the final.

p.2, last para.: This paragraph clears up a point which had been rather confusing to me. It's an important point that should be retained.

Where you quote me, refer to me as: Nongame Coordinator.

The nest site you describe as 01-A should be numbered as -03 to be consistent with the MBEWG system of numbering. Thus, the full number becomes 041-005-03 (management zone-territory number-nest number). That's how it will be identified in production memos & etc.

Nest turnover should be recognized, perhaps on p. 13. In Montana we lose an average of 7% (range 3-15%) of our nests each year that have to be rebuilt. The continent-wide average is also about 7% (range 5-20%). Thus, the actual location of a nest site within a territory is somewhat fluid over time, and you should anticipate these eagles may move again in the future. Nest longevity in Montana has ranged from 1-48 years. Nest tree selection by bald eagles focuses on big, old trees, thus they tend to select trees with the shortest remaining life expectancy. In planning for the future we need to be concerned with an ongoing supply of suitable nest trees.

p. 21: "No known bald eagle nests would be destroyed by construction..." makes it sound like an option. It isn't, due to the Bald Eagle Protection Act of 1940 and other protective laws.

Also on p. 21, 3rd para., the sentence "Since there is a possibility that bald eagles will rebuild..." would be more appropriate expressed as: Bald eagles usually rebuild destroyed nests, often selecting another tree in the same stand or a nearby stand. This better reflects our experience with the species.

There are a few references to prey species in the document. We know generally what the food habits of bald eagles are, but we also know there is substantial variation between pairs. I think it would be worthwhile to search for prey remains beneath the nest (post fledging) to at least get some idea of what they are using. You might not learn very much, but on the other hand you might discover something which provides additional insight to the behavior of this particular pair. I think it would be a couple of hours well spent.

p. 27, top: Carrion (dead deer) should be moved off the right-of-way as per objective 1.3123 in the Pacific Recovery Plan. I have enclosed p. 47 from the Plan as well as the literature citation. I think it is a good move to cite the Recovery Plan. Also, the potential for illegal killing is an enforcement issue, and you may wish to mention that continued development of the area may require additional law enforcement. And, probably not just for eagles!

p. 27, 2nd para.: We assume that nesting bald eagles are willing to accept whatever was present in the area at the time they selected it. Thus, their habituation to existing activity is a correct assumption. Again, bear in mind that the nest may move.

p. 27, 3rd para.: I would suggest defining two categories of rail line maintenance: 1) emergency, and 2) non-emergency or "planned". Emergency maintenance/repairs will cause disturbance which, though unavoidable, should be recognized in advance to avoid mis-understanding when it occurs with little or no prior notice. Planned maintenance should not take place in Zones I & II prior to May 15 (incubation, light downies), then in the afternoons when young are dark downies or older. This allows them to get fed up during the morning feeding bout before the maintenance activity begins.

p. 28, end of first para. again cite Recovery Plan.

p. 30, 3rd para.: The limits of observability from the nest is valid for incubation, brooding, feeding and perching. However, these are big birds that spend a lot of time in the air. The defended area around a nest extends to about 0.5 or 0.6 mile radius from the nest <u>over</u> the canopy, and roughly 300 vertical feet above the nest, tapering down to the edges forming a "mushroom shaped" defended territory. The "stem" is the 0.25 mile radius on the ground. As mammals, <u>we</u> tend to look at everything from the ground, but eagles are not mammals. Visual screening is both useful and important, but the eagles will be very much aware that the balance of the route exists. During nestling stages, an adult often spends time soaring around and around over the nest (at the "top of the mushroom") guarding their territory. With their acute visual resolution, they <u>will see everything</u> going on for a considerable distance. We are fooling ourselves if we think we can fool them.

p. 31: Again, I think a quick search for prey remains beneath the nest tree would be a good idea. Either corroborate what we already suspect, or discover something new - or at least interesting.

p. 32, first bullet: instead of using fledging as a criteria, I would be more comfortable with 5 days following observation of independent flight. This gives the young a chance to get over some of their initial clumsiness.

p. 32. bottom: I'm pretty cool toward the idea of building the berm for visual screening. Quite frankly, I don't see much advantage to it from the eagles perspective. Only a few wing beats will give the eagles a view of whats behind the berm. Furthermore, when on the nest, the eagles may be apprehensive of noise from a source that they can't see or associate the noise with (this is conjectural on my part). Without a more convincing argument, I would prefer to see the funds for the berm dedicated to off-site mitigation as presented on p. 33.

p. 33: I really like this idea. If it comes to pass, please stay in touch because I would like to be involved.

p.34: Trapping issue: Its not the traps themselves that are the greatest risk, but the manner of making the set. Use of exposed baits is very hazardous to eagles (and other non-target species) and should be avoided. A prohibition on trapping in the ROW would certainly solve the problem, but more responsibility on the part of the trappers would be another approach.

The Montana Bald Eagle Management Plan is cited:

Montana Bald Eagle Working Group (MBEWG). 1994. Montana Bald Eagle Management Plan. USDI, Bur. Rec., Billings, MT. 104pp.

Please pardon my lack of polish to this letter and the random sequence of topics. Overall I think you have a pretty good document going.

Sincerely,

Dennis L. Flath
Nongame Coordinator, and
Chair, Montana Bald Eagle
Working Group

encl.

c: Oddan
Hinckley
Hazlewood

THIS IS THE COMPLETED PACIFIC BALD EAGLE RECOVERY PLAN. IT HAS BEEN APPROVED BY THE U.S. FISH AND WILDLIFE SERVICE. IT DOES NOT NECESSARILY REPRESENT OFFICIAL POSITIONS OF COOPERATING AGENCIES, AND IT DOES NOT NECESSARILY REPRESENT THE VIEWS OF ALL INDIVIDUALS INVOLVED IN THE PLAN FORMULATION. THIS PLAN IS SUBJECT TO MODIFICATION AS DICTATED BY NEW FINDINGS AND CHANGES IN SPECIES STATUS AND COMPLETION OF TASKS DESCRIBED IN THE PLAN. GOALS AND OBJECTIVES WILL BE ATTAINED AND FUNDS EXPENDED CONTINGENT UPON APPROPRIATIONS, PRIORITIES, AND OTHER BUDGETARY CONSTRAINTS.

<u>LITERATURE CITATION SHOULD READ AS FOLLOWS:</u>

U.S. Fish and Wildlife Service, 1986. Recovery Plan for the Pacific Bald Eagle. U.S. Fish and Wildlife Service, Portland, Oregon. 160 pp.

<u>Additional copies may be obtained from:</u>

Fish and Wildlife Reference Service
Informatics General Corporation
6011 Executive Boulevard
Rockville, Maryland 20852
Telephone: 1-800-582-3421
(301) 770-3000

1.3121 MAINTAIN AND ENHANCE WETLAND AREAS FOR WATERFOWL PRODUCTION

Waterfowl comprise a significant portion of the eagle diet throughout the west; their reproduction must be maintained at eagle breeding areas in the Pacific recovery area as well as further north. Waterfowl produced in Canada are important to wintering eagle populations in the Pacific recovery area.

1.3122 ENHANCE WATERFOWL HABITAT ON BALD EAGLE WINTERING AREAS

Because of their importance both as a primary and secondary eagle food source, waterfowl populations should be encouraged to use areas of open water where bald eagles winter. A small population of waterfowl can support many wintering eagles. Waterfowl habitat management can include water level management and establishment of food plots, such as fields of unharvested corn.

1.3123 LEAVE AVIAN AND MAMMALIAN CARCASSES ON SITES FOR FUTURE USE BY EAGLES

Dead birds and mammals provide important food for eagles in the winter and early spring. Livestock and game carcasses should be removed from eagle use areas only if contaminants or disease agents are present, human health is endangered, or the location of the carcasses (e.g. on roads or railroad tracks) could cause eagle injuries or mortalities. In emergency weather situations, it may be desirable to deposit carcasses at eagle use areas. State conservation officers should develop plans for distributing road-killed game during emergency situations.

Appendix II. Description of bald eagle nest site management zones (MBEWG, 1994).

Zone 1 - Nest Site Area

Zone 1 includes the area in which human activity or development may stimulate abandonment of the breeding area, affect successful completion of the nesting cycle or reduce productivity, either annually or long-term. It includes the area within a 1/4 mile (440 m) radius of all nest sites in the breeding area that have been active within 5 years or until an active nest is located. Then, Zone 1 applies only to the active nest.

Objectives:

1. Eliminate disturbance.

2. Maintain or enhance nest site habitat suitability.

Guidelines:

1. Existing levels of human activities can continue if the breeding area has at least a 60% nest success, has fledged at least 3 young during the preceding 5 years, and has a low potential hazard rating on the Bald Eagle Nest Survey Form. Low intensity activities such as dispersed recreation can occur, but high intensity activities such as heavy equipment use, blasting, logging, or concentrated recreation should not occur during the nesting season. High intensity activity can occur during the non-nesting season if designed to minimize potential disturbance and avoid conflicts with bald eagle key use areas.

2. Additional human activity should not occur within Zone 1 from initiation of nest site selection to one month after hatching, unless the activity is consistent with bald eagle conservation. A short duration (less than one hour), nonrecurring, nonmotorized activity may occur during the late nestling to 2 weeks post fledgling period if the activity is under direct supervision of eagle specialists. Low intensity human activities such as dispersed recreation can occur during the non-nesting period or when the breeding area is not occupied.

2. Permanent development should be prohibited within Zone 1 of all nests (including alternates). Habitat alteration which may negatively affect the suitability of the breeding area for bald eagles should also be avoided. Such activities include, but are not limited to, timber harvest, prescribed fire, powerline construction, pesticide use, land clearing, stream channeling, levee or dam construction or wetland drainage.

4. If conflicts persist, subsequent levels of planning should ensue.

Zone 2 - Primary Use Area

Zone 2 includes the area 1/4 mile (400 m) to 1/2 mile (800 m) from all nest sites in the breeding area that have been active within 5 years or until an active nest is located. Then, Zone 2 applies only to the active nest. The Working Group assumes that 75% of activity (foraging, loafing, bathing, etc.) of a breeding pair occurs within the boundary of Zone 2 (including Zone 1).

Objectives:

1. Minimize disturbance.

2. Maintain the integrity of the breeding area.

2. Eliminate hazards.

Guidelines:

1. Low intensity activities such as dispersed recreation can occur, but high intensity activities such as heavy equipment use, blasting, or concentrated recreation use should not occur during the nesting season. Higher intensity activities can occur during the non-nesting season if designed to minimize potential disturbance and avoid conflicts with bald eagle high use areas.

2. Habitat alterations should be designed and regulated to ensure that preferred nesting and feeding habitat characteristics are maintained.

3. Permanent developments that may increase human activity levels during the nesting season should not be constructed within Zone 2 of all nests (including alternates). If conflicts persist, subsequent levels of planning should ensue.

4. Structures that pose a hazard such as overhead utility lines should not be constructed within Zone 2 of all nests (including alternates). Existing structures that pose risks of injury or death should be removed or modified.

5. Permanent developments should not be constructed.

5. If conflicts persist, subsequent levels of planning should ensue.

Zone 3 - Home Range

Zone 3 represents most of a home range used by eagles during the nesting season. It usually includes all suitable foraging habitat within 2.5 mi (4 km) of all nest sites in the breeding area that have been active within 5 years.

Objectives:

1. Maintain suitability of foraging habitat.

2. Minimize disturbance within key areas.

3. Minimize hazards.

4. Maintain integrity of the breeding area.

Guidelines:

1. Human activities, including permanent developments, should be designed and regulated to minimize disturbance and avoid conflicts with bald eagle key use areas.

2. Human activity should not reach a level where cumulative effects decrease habitat suitability.

3. Habitat alteration should be designed to ensure that prey base and important habitat components, such as perch trees or screening vegetation, are maintained or enhanced.

4. Pesticides should not be used in a manner which pose a hazard to bald eagles.

5. Structures which pose a hazard should be located and designed to minimize or avoid risk to bald eagles or their prey.

6. If conflicts persist, subsequent levels of planning should ensue.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLGICAL SERVICES
100 N PARK, SUITE 320
HELENA MT 59601

November 22, 1995

M.24-ICC Tongue River RR

Ms. Elaine K. Kaiser
Chief, Section of Environmental Analysis
Interstate Commerce Commission
Washington, DC 20423

Dear Ms. Kaiser:

This letter transmits the Fish and Wildlife Service' s (Service) final biological opinion on the proposed Tongue River Railroad Company's (TRRC) Additional Rail Line from Ashland to Decker, MT. The biological opinion was prepared in response to your letter dated August 18 requesting formal consultation which was received in our office on August 25, 1995. This document represents the Service's biological opinion on the effects of that action on the bald eagle in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). The Service has examined the proposed project in accordance with the section 7 Interagency Cooperation Regulations (50 CFR 402, 51 FR 19957-19963). This biological opinion refers only to the potential effects on the bald eagle and not the overall environmental acceptability of the proposed project.

Sincerely,

ACTING Field Supervisor
Montana Field Office
U.S. Fish and Wildlife Service

STO

cc: Pat Graham, Director, Montana Department of Fish Wildlife, and Parks, Helena.
GARD, MT/WY, Ecological Services, U.S. Fish and Wildlife Service, Denver, CO
DES, U.S. Fish and Wildlife Service, Washington, DC
Mr. Thomas Ebzary, Tongue River Railroad Company, Village Center 1, Suite 165, 1500 Poly Drive, Billings, MT 59102
Suboffice Coordinator, Ecological Services, Billings, MT

BIOLOGICAL OPINION

ON

TONGUE RIVER RAILROAD COMPANY'S

ADDITIONAL RAIL LINE FROM

ASHLAND TO DECKER, MT

U. S. FISH AND WILDLIFE SERVICE
MONTANA FIELD OFFICE
HELENA, MONTANA

Table of Contents

Page

Introduction 1

Background- Consultation History 1

Description of the Proposed Action 2

Current Status of the Bald Eagle 2

Environmental Baseline 3

Direct Effects of the Proposed Action on Listed Species 5

Indirect Effects 6

Cumulative Effects 6

Conclusion 7

Incidental Take 7

Reasonable and Prudent Measures 8
Terms and Conditions 9

Conservation Recommendations 12

Reinitiation Requirement 13

Literature Cited 14

Appendices

A. WHITE PAPERS I

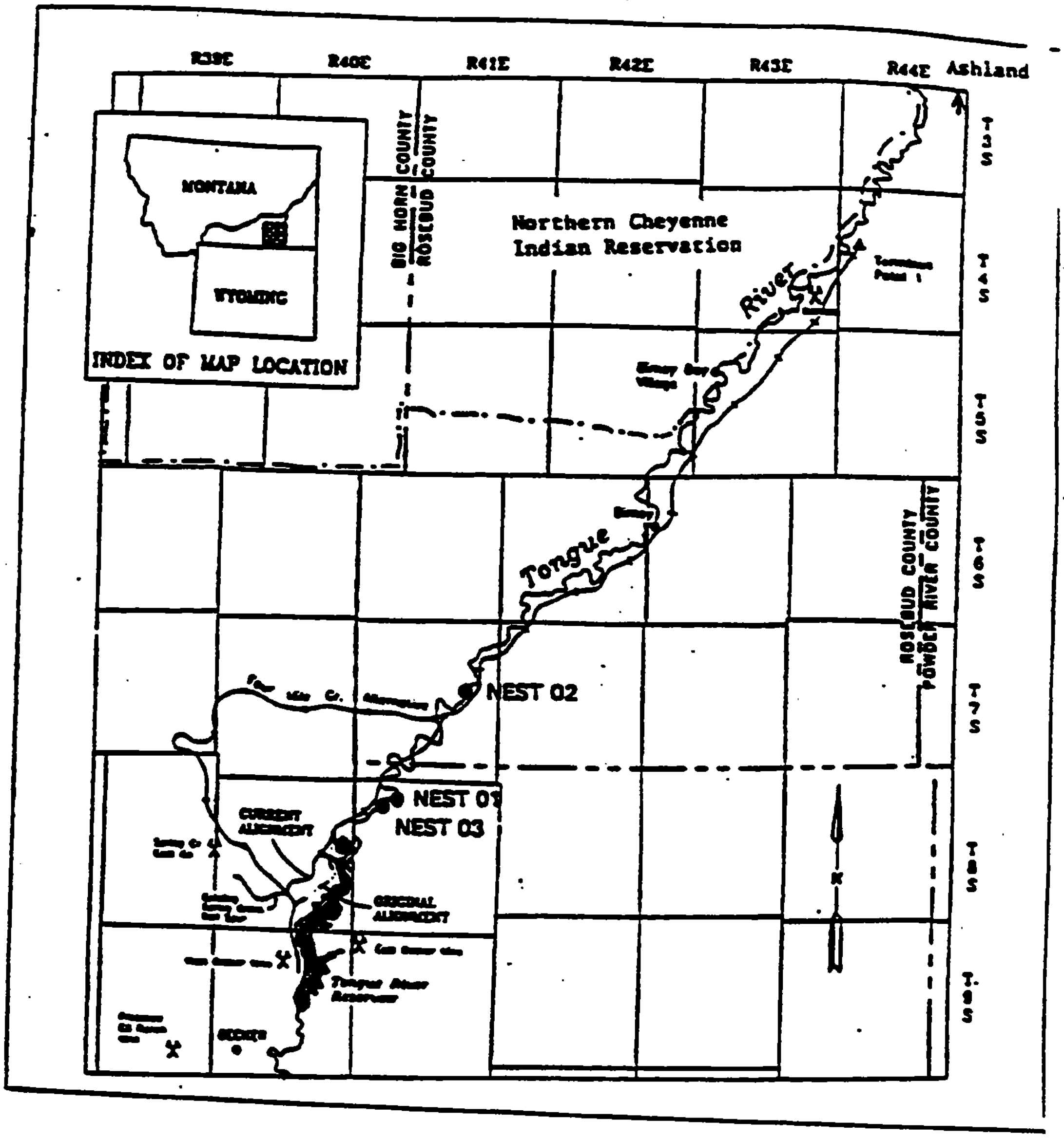


Fig. 1. Location of the TRRC Extension (adapted from ICC, 1994) and bald eagle nests 01, 02 and 03.

Introduction

The U. S. Fish and Wildlife Service (Service) has reviewed the biological assessment (BA) for the proposed Tongue River Railroad Company's (TRRC) Additional Rail Line From Ashland to Decker, Montana. Your letter dated August 18 requesting formal consultation was received on August 25, 1995. This document represents the Service's biological opinion on the effects of that action on the bald eagle in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.).

This biological opinion is based on information provided in the June 1995 biological assessment, the March 1994 supplement to the draft environmental impact statement (DEIS), the July 1992 (DEIS), numerous meetings with the TRRC representatives and their consultant during the preparation of the biological assessment, field investigations, and other sources of information.

Section 7(b)(3)(A) of the Act requires that the Secretary of Interior issue biological opinions on Federal agency actions that may affect listed species or critical habitat. Biological opinions determine if the action proposed by the action agency is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Section 7(b)(3)(A) of the Act also requires the Secretary to suggest reasonable and prudent alternatives to any action that is found likely to result in jeopardy or adverse modification of critical habitat, if any has been designated.

Background-Consultation History

On November 17, 1989, the Interstate Commerce Commission (ICC) published in the Federal Register it's intent to prepare an environmental impact statement (EIS) for the TRRC's proposed construction and operation of a 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension). The TRRC Extension would extend the already approved but not yet built 89-mile rail line from Miles City to Ashland, Montana. The primary purpose of the TRRC Extension would be to allow the shipment of coal from operating mines near Decker, Montana north to the previously approved Terminus Point 1 near Ashland.

As stated in the biological assessment, on December 28, 1989 the Service provided a species list to the ICC indicating that three species, all listed as endangered, could potentially occur in the area to be affected by the TRRC Extension (Palawski, 1989): 1) the bald eagle (*Haliaeetus leucocephalus*) could nest along the Tongue River, and could occur as a migrant and winter resident 2) the peregrine falcon (*Falco peregrinus*) could occur as a migrant; and 3) the black-footed ferret (*Mustela nigripes*) could occur in black-tailed prairie dog (*Cynomys ludovicianus*) colonies. On November 10, 1994 the USFWS added the pallid sturgeon (*Scaphirhynchus albus*), which could occur in the lower Tongue River, to this list (McMaster, 1994).

Following discussions between the ICC and the Service, the ICC requested Historical Research Associates (HRA) to submit a copy of the first draft of the biological assessment to the Service to review in mid-January, 1995. This was followed by a February 2, 1995 meeting between the Service, WESTECH and TRRC personnel to discuss revisions to the first draft. A second draft was submitted to the Service on March 3, 1995. On March 24, 1995 the Service, TRRC and WESTECH personnel discussed revisions to the second draft during a conference call. At that time it was apparent that concerns regarding all species except the bald eagle had been resolved. A third draft of the bald eagle portions of the biological assessment was submitted to the Service on April 11 and discussed during a meeting on April 13, 1995. A fourth draft of the bald eagle section was then written. Between April 18 and May 11, 1995 TRRC, HRA and WESTECH asked several members of the Montana Bald Eagle Working Group (MBEWG) to review the fourth draft, and for recommendations regarding the bald eagle.

The Service reviewed the final biological assessment and submitted comments to the ICC in a letter dated July 12, 1995. The Service did not concur with the conclusion reached by the ICC in its biological assessment that the proposed action would not adversely affect the bald eagle. The Service did concur with the "no effect" determination on the peregrine falcon, pallid sturgeon and the black-footed ferret. On August 18, 1995, the ICC requested formal consultation. The Service has examined the proposed action in accordance with the procedural regulation governing cooperation under Section 7 of the Endangered Species Act of 1973, as amended (Act) (50 CFR 402 and U. S. C. 1531 et seq). The overall environmental acceptability of the proposed action was addressed in our May 4, 1994 and August 29, 1991 letters and is not considered in this opinion.

Description of the Proposed Action

The proposed action being considered in this formal consultation is the construction of an additional rail line adjacent to the Tongue River from Ashland to Decker, Montana. The alignment generally parallels the Tongue River from Ashland to the confluence of Four Mile Creek. This portion of the project is located in fairly open range land. The portion of the alignment from Four Mile Creek to the Tongue River Dam (about 10 miles) is located in a much narrower canyon and would require the construction of 5 bridges over the Tongue River and one tunnel. The track would be comprised of 136-pound continuous welded rail on treated hardwood ties, resting on 12 inches of ballast and 15 inches of sub-ballast. The right-of-way (ROW) would vary between 75 and 300 feet in width, and would average 200 feet. Facilities associated with the rail line would include road and railway crossings, culverts, cattle passes, signal and communication facilities, etc.

Current Status of the Bald Eagle

In 1978 there were only 12 breeding areas for bald eagles known in Montana (Servheen 1978). As of autumn 1995, 222 current or historical breeding areas were known in Montana. Montana is included in the seven-state Pacific Bald Eagle Recovery Area. The primary recovery objectives for this area are to provide secure habitat for bald eagles and increase populations in specific geographic areas to levels where it is possible to delist the species. Delisting should occur on a region-wide basis and should be based on the following criteria: (1) a minimum of 800 pairs nesting in the seven-state recovery area; (2) these pairs should annually produce an average of at least 1.0 fledged young per pair, with an average success rate per occupied site of not less than 65% over a five-year period; (3) population recovery goals must be met in at least 80% of the management zones that have nesting potential; and (4) a persistent, long-term decline in any sizeable (greater than 100 eagles) wintering aggregation would provide evidence for not delisting the species (USFWS, 1986). In 1994, there were 1192 occupied territories reported with 1.03 young per occupied territory within the Pacific Bald Eagle Recovery Area. The number of occupied territories has consistently increased since 1986 and exceeded 800 for 5 years beginning in 1990 when 861 were reported. Based in part on the above information, the bald eagle has since been reclassified from endangered to threatened effective August 11, 1995; (60 FR 36001-36010).

The Pacific Bald Eagle Recovery Plan (USFWS, 1986) uses the zone approach to differentiate subpopulations and habitat important to bald eagle recovery in the Pacific recovery area. The management zone approach is central to the recovery process because establishment of well-distributed bald eagle populations and habitats is essential for recovery of the species in the recovery area.

There are seven bald eagle management zones in Montana. The proposed action is located in Management Zone 41 which includes the Tongue River drainage. Presently, there are 19 breeding pairs in Zone 41 (Flath pers comm). Bald eagle breeding populations have been increasing in recent years and are nearing the recovery goals set in the recovery plan (USFWS 1986). The bald eagle was downlisted to threatened status on July 12, 1995.

Nesting chronology, although variable, is well documented for bald eagles in Montana (USFWS 1986). Bald eagles are extremely sensitive to disturbance during nest building, egg laying, and incubation periods (Feb. 1 through April 30). Bald eagles are most likely to desert nest sites during this period if disturbed.

Environmental Baseline

Under the provisions of section 7(a)(2), when considering the "effects of the action" on listed species, the Service is required to consider the environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area (50 CFR 404.02), including Federal actions in the area that have already undergone section 7 consultation.

The project area is influenced mainly by hydrology changes caused by the Tongue River Dam which has limited the magnitude and frequency of flooding which results in less scouring of river banks necessary for cottonwood regeneration. Periodic channel migrations accompanied by erosion of streambanks and deposition of alluvial material to form sandbars is essential to the maintenance of riparian cottonwood communities. Cottonwoods require nonvegetated, recently deposited alluvium for successful seed germination and establishment. Seeds germinate within 48 hours and must have a continuous supply of moisture for several weeks. On-going ranching practices have also resulted in clearing of cottonwoods for alfalfa crops and in combination with grazing practices keep most cottonwood seedlings from becoming established. Other projects in the immediate area (upstream of the Tongue River Dam) which have significantly altered the landscape include the Decker and Spring Creek coal mines.

The Service believes that the current status of the bald eagle in the project area is already impacted by the above mentioned projects. The habitat and prey base for the bald eagle have been negatively impacted by those actions and will be further impacted by the construction of the proposed railroad. The environmental baseline currently includes 3 nest sites with one active nest which fledged one bird in 1995.

As stated in the Biological Assessment; "Bald eagles occur along the Tongue River as migrants and winter residents. They forage on fish, waterfowl, carrion, etc. During migration as many as 50 bald eagles have been counted along the Tongue River from Miles City to the upper end of the Tongue River Reservoir (Farmer, 1992).

The value of the river immediately below the Tongue River Dam to attract migrant and wintering bald eagles has been recognized (e.g., Lockhart and McEneaney, 1978). It is estimated that an average 10-15 bald eagles winter along the river below the dam (USFWS, 1992).

In the mid-1980's, a pair of bald eagles exhibited pair-bonding activity near a nest (this nest will be referred to as Nest 01) in a cottonwood tree along the Tongue River about 2.5 miles below the dam. No egg-laying occurred and in subsequent years this nest was used by golden eagles (USFWS, 1992).

In spring 1992 a pair of bald eagles established a nest (Nest 02, Figure 1) in a cottonwood tree about eight miles downstream from the dam (Harms, 1992). In the past few years Nests 01 and 02 were apparently used interchangeably by the same pair of bald eagles (Flath, pers comm). In spring 1994 Nest 01 was occupied by bald eagles but was destroyed in a windstorm; Nest 02 was not occupied. It was expected that there would be a good probability that these bald eagles would construct a new nest somewhere downstream from the dam, or would reoccupy Nest 02 (Flath, pers comm). It appears that this assumption was correct, as a great blue heron nest about two miles downstream from the dam was occupied in March 1995; this new nest will be referred to as Nest 03.

Another pair of bald eagles was observed in the vicinity of Nest 02 in March 1995. Nest 02 may have also been destroyed, as it could not be located in March 1995 (John Berry, biologist, Kiewit Mining Group, Sheridan, Wyoming, personal communication, May 1, 1995). This second bald eagle pair therefore apparently does not have a nest but may yet build one (Flath, pers comm).

Loss of bald eagle nests is not uncommon. In Montana, an average of seven percent (range 3-15 percent) of all bald eagle nests are lost each year; the continent-wide nest turnover rate is also seven percent (range 5-20 percent). Thus, while certain nests may remain active for many years, it is not unusual for the location of a nest site within a bald eagle nesting territory to change (Flath, pers comm).

In addition to the nests in the vicinity of the TRRC Extension, bald eagles have also successfully nested along the Tongue River upstream from the Tongue River Reservoir (Phillips et al., 1990) and downstream between Ashland and Miles City (ICC, 1992). Both these nests are also in cottonwood trees."

Direct Effects

The Service believes that the combination of potential construction and operation disturbances would likely have direct effects on the bald eagle and their habitat.

The Montana Bald Eagle Management Plan (MBEWG, 1994) summarized the reaction of bald eagles to human activities as:

> Bald eagles are sensitive to a variety of recreational, research, resource and urban development activities. Responses of eagles may vary from ephemeral, temporal and spatial avoidance of activity to total reproductive failure and abandonment of breeding areas. Less adequately documented is that bald eagles also tolerate apparently significant disturbances. Relationships of human activity and eagle responses are highly complex, difficult to quantify, and often site-specific. Responses vary depending on type, intensity, duration, timing, predictability and location of human activity. The way in which these variables interact depends on age, gender, physiological condition, sensitivity, residency and mated status of affected eagles. Prey base, season, weather, geographic area, topography and vegetation in the vicinity of activities and eagles (plus other variables probably unperceived by humans) also influence eagle responses. Cumulative effects of many seemingly insignificant or sequential activities may result in disruption of normal behavior. Lack of experimental data (due to endangered/threatened status) limits quantification of response to empirical evidence, but general trends in eagle responses (or lack thereof) to human activity are becoming evident to field researchers and managers, although somewhat subjectively. Clearly, some bald eagles are more tolerant of human activity than others. Tolerance threshold is usually site, pair, and activity specific and a function of type, intensity, and proximity of disturbance over exposure time. However, it is becoming apparent that there are "urban" and "rural" eagles. Urban eagles may be more tolerant of certain human activities than their rural counterparts because they have been or are exposed to more human activity at gradually increasing levels while rural eagles' exposure is abrupt.

The Montana Bald Eagle Management Plan (MBEWG 1994) defined disturbance, as used above, to be "any human elicited response that induces a behavioral or physiological change in a bald eagle contradictory to those that facilitate survival and reproduction. Disturbance may include elevated heart or respiratory rate, flushing from a perch or events that cause a bald eagle to avoid an area or nest site."

Based on the above descriptions, it is reasonable to assume that bald eagles nesting along the Tongue River in the vicinity of the TRRC Extension would be accustomed to some level of disturbance related to use of the county road (which passes within 800 feet of Nest 01, within 200 feet of Nest 03, and within 1/2-mile of Nest 02 (Figure 1)), residences, agricultural activities such as hay production and feeding livestock, and limited recreational use of the Tongue River. It is also reasonable to assume that the construction and operation of a railroad in the project area is going to cause considerably more disturbance particularly at the nest site than the birds in the vicinity are accustomed to. Responses of eagles may vary from ephemeral, temporal and accustomed to. Responses of eagles may vary from ephemeral, temporal and spatial avoidance of activity to total reproductive failure and abandonment of breeding areas. Less adequately documented is that bald eagles also tolerate apparently significant disturbances. Relationships of human activity and eagle responses are highly complex, difficult to quantify, and often site-specific. Responses vary depending on type, intensity, duration, timing, predictability and location of human activity. The Service believes that the combination of construction and operational disturbances is likely to exceed the tolerance of the birds particularly since the railroad will be in such close proximity to nest 03 (approximately 1000 feet). The intensity and duration of disturbances will be much greater than the birds are accustomed to. Although birds are less likely to desert nest sites when disturbed during hatching, rearing and fledging periods (May 1 through August 15), care should be exercised to minimize disturbance (USFWS 1986). The Service believes that the combination of construction and operational disturbances may cause the eagles to abandon nest 03. Monitoring will help determine the short term affects of construction activities, but will not alleviate the potential long term operational impacts. Nesting habitat enhancement and prey base enhancement are appropriate measures to help off-set long term impacts to the population but do not remove or eliminate the potential to incidentally take eagles associated with nest 03.

The effects of the proposed project on the habitat would include removal of some of the riparian vegetation that serves as perch, screening, foraging, and potential nesting vegetation from the riverbank in the project area. Another significant direct effect to the eagle includes possible train strikes of adult birds during the operational phase. Monitoring may help minimize short term direct affects during construction, but will not alleviate the potential long term operational impacts. Nesting habitat enhancement and prey base enhancement are other appropriate measures to help off-set long term direct impacts.

Indirect Effects

Indirect effects of the proposed action include such things as temporary displacement of prey due to disturbance from passing trains or construction and maintenance activities. Such disturbance can potentially disrupt breeding and feeding activities.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

The continued fragmentation of habitat and loss of riparian vegetation due to vegetation removal may eventually affect the eagles ability to adequately use the prey base or other important habitat features. The Montana Bald Eagle Management Plan emphasized that even though the bald eagle populations have increased in recent years, the continued alteration and removal of suitable habitat due to human activities may affect the long-term recovery of the bald eagle in Montana.
The Service does not believe that the direct, indirect and cumulative

effects of the proposed project would reduce appreciably the likelihood of both survival and recovery, or alter appreciably the habitat of the Pacific Bald Eagle Population in the wild by reducing the reproduction, numbers, or distribution of the species.

As stated in the biological assessment, reasonably foreseeable related and unrelated actions, and cumulative effects would include: 1) assuming construction of the already approved rail line from Miles City to Ashland, other bald eagle nests along the Tongue River could experience effects similar to those of the TRRC Extension. As noted earlier, there is only one known bald eagle nest in the vicinity of this route; 2) development of 2-3 coal mines in the Ashland area would not affect bald eagles, since no nesting sites have been identified which would be disturbed; 3) an increasing human population in the region could result in displacement, accidental mortalities, or increased illegal killing of bald eagles; and 4) if the Tongue River Dam Rehabilitation Project interrupts flows in the Tongue River or radically changes water levels in the Tongue River Reservoir, it could affect use of these waters by prey species such as waterfowl and shorebirds.

Conclusion

After reviewing the current status of the bald eagle, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed construction of an additional rail line adjacent to the Tongue River from Ashland to Decker, Montana, is not likely to jeopardize the continued existence of the Pacific states bald eagle population. No critical habitat has been designated for the bald eagle. Thus, the proposed action will not destroy or adversely modify any designated critical habitat of this species.

Incidental Take

The regulations that govern the Section 7 consultation process published in the Federal Register of June 3, 1986 address incidental take of listed species that may occur as a result of implementing an action (50 CFR S402.14(i)). Section 9 of the Act makes it unlawful for any person to "take" an endangered species. As defined by the Act, the term "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" 10 U.S.C. 1532(19). Further, "harm" is defined to include "an act ...[that] may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns including breeding, feeding, or sheltering" (50 C.F.R. 17.3). "Harass" in the definition of "take" in the Act means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." However, under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered taking within the bounds of the Act provided that such taking is in compliance with an incidental take statement in the biological opinion.

The Service anticipates that the proposed project will likely result in the incidental take of bald eagles due to the loss of nestlings as a result of nest abandonment during incubation or premature fledging.

Additionally, we believe mortalities may result from train strikes while birds are feeding on carrion. Discussions with USFWS law enforcement personnel also confirm that eagles have been killed by train strikes (Mann, pers comm). Therefore, the Service anticipates that two eagles may be incidentally taken during construction and one eagle taken every two years during operations of the TRRC Extension.

Nest 03 was successful last year and fledged one bird. The rationale for establishing the incidental take at 2 eagles during the construction phase is based on the fact that the mean brood size for Montana is 2 and initially the most likely incidental take would involve the loss of one years production from that nest through abandonment by the adults during incubation or premature fledging of young birds.

It is also expected that the eagles may move the nest farther from the railroad tracks. Preliminary evaluation of existing eagle nests indicates that there are very few successful nests within 1/4 mile of existing railroad tracks. After construction the most likely cause for incidental take will be a strike by a train. We note that the proposed removal of carrion from the immediate vicinity of the railroad tracks is likely to reduce the potential of rail strikes, but still doesn't remove the potential. The above mentioned measures to enhance nesting habitat and enhance the prey base are actions that would benefit eagles in the long term and help offset potential negative impacts to the eagle population.

The incidental take statement provided in this opinion satisfies the requirements of the Endangered Species Act, as amended. This statement does not constitute an authorization for take of listed migratory birds under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, or any other Federal statute.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Monitor nest activities to detect disturbance and halt any activities that disturb birds.

2. Schedule planned maintenance activities in such a way as to minimize effects to migrant and breeding bald eagles along the TRRC Extension route, and to reflect the actual chronology of bald eagle use of the Tongue River valley. Provide for appropriate responses to train derailments to minimize the potential effect of hazardous material spills in bald eagle habitat, particularly the potential to the aquatic-oriented prey base (fish and waterfowl).

3. Conduct aerial surveys of the Tongue River from its confluence with the Yellowstone River to the upper end of the Tongue River Reservoir (approximately Decker, Montana) which will be flown in December, January and February.

4. Remove carrion from the rail line in such a manner as to eliminate or minimize the potential for mortalities of bald eagle from train strikes, while retaining this carrion as a potential food source.

5. Adjust the TRRC Extension construction schedule to reflect the actual bald eagle nesting season on the Tongue River.

Terms and Conditions

The TRRC has developed a bald eagle monitoring program with specific monitoring elements. The Service believes that these monitoring elements are necessary to implement the above reasonable and prudent measures and thus serve as terms and conditions for this incidental take statement. In order to be exempt from the prohibitions of section 9 of ESA, the ICC must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. Monitor nest activities to detect disturbance and halt any activities that disturb birds. A site-specific bald eagle habitat management plan will be prepared for nest site 03 or any other current bald eagle nest within one year prior to the start of construction (appendix VII of the Montana Bald Eagle Management Plan contains an outline of the recommended steps for developing a management plan). The TRRC has developed and agreed to do specific monitoring as follows:

a. Two years prior to construction of the TRRC Extension, TRRC will survey the Tongue River valley along the Extension route for the presence of nesting bald eagles. Any active or inactive bald eagle nests will be reported immediately to the USFWS . Assuming access to a nest site is available, the ground below active nests will be surveyed during the post fledging period for evidence revealing the food habits of the eagles at this site. Such information might be useful in defining the threshold limits discussed below.

b. A program to monitor each active nest for 2 years prior to and during construction will be developed through on-site consultation with the USFWS. The primary objective of monitoring would be to determine nest site management zones per the Montana Bald Eagle Management Plan (1994) and to determine if approaching construction activities have a negative effect on nesting bald eagles. USFWS consultation would be expected to define, on a nest-by-nest basis, the kind and amount of overt disturbance behavior exhibited by nesting bald eagles that would indicate that construction activities should be halted (henceforth called "threshold behavior"). It is expected that parameters influencing the determination of threshold behavior would include, but not be limited to, location of the nest in relation to the TRRC Extension route, distance from other human disturbances such as the county road, and known history of the nesting birds. It is expected that the threshold behavior value would vary, depending on the time of the nesting period (e.g., egg laying vs. rearing).

c. Persons assigned to monitor active bald eagle nests (henceforth called "environmental inspectors") would have the authority to immediately halt TRRC Extension construction activities in the vicinity of an active nest when the threshold behavior is exhibited by the nesting birds. This authority would be granted as part of contract specifications between TRRC and the construction contractor. The environmental inspector would notify the on-site construction supervisor that construction activities must cease. The on-site construction supervisor would be responsible for notifying construction crews to cease activities in the vicinity of the nest.

d. In the event of a construction halt, the environmental inspector would notify USFWS. USFWS would evaluate the situation and make a recommendation to halt construction activities until a later date, proceed with certain kinds of activities, etc.

2. Within the framework of the above monitoring plan (Term & Condition #1), the following TRRC Extension construction activities could occur:

   a. There would be no construction activities within Management Zones 1 and 2 at any active bald eagle nest during the nesting period (February 1 - August 15, or until five days after the first observation of independent flight).

   b. Low intensity activities, such as surveying, could occur in Management Zone 3 beyond line of sight of any active nest from February 1 to May 1 (i.e., courtship through initiation of hatching). High intensity activities (heavy equipment operation, grading, etc.) would not occur in Management Zone 3 around any active nest during this period.

   c. Once monitoring confirms that hatching has occurred (any time after May 1), low intensity activities could occur anywhere within Zone 3 of any active nest. High intensity activities would be confined to those portions of Management Zone 3 beyond line of sight of an active nest.

   d. Once monitoring confirms that fledging has occurred (i.e., five days following the first observation of independent flight), high intensity activities could occur anywhere within Management Zones 1, 2 and 3.

3. The following measures would be implemented during operation of the TRRC Extension:

   a. Rail line maintenance activities would fall into two general categories. The first would be comprised of non-emergency or planned activities, and would not take place in Management Zones 1 or 2 from February 1 through May 15. After May 15 until the first observation of independent flight of the fledglings (usually no later than August 15), these activities will occur in the afternoons. By afternoon, adult eagles have usually completed feeding the chicks and there would be minimal disruption of this activity.

   b. Certain planned maintenance activities, such as routine inspections of the rail line, would necessarily have to occur during the February 1 - May 15 period. However, these activities would be expected to be short-term and low intensity, and would be anticipated to have minimal effects to bald eagles.

c. The second category of maintenance activity would be emergency maintenance or repairs. Such activities cannot be foreseen and therefore cannot be planned to occur in periods that would minimize the effect to nesting bald eagles. The degree of effect to nesting bald eagles would be influenced by the magnitude of the activity, the time of the nesting season at which the activity occurs, and the tolerance for disturbance displayed of the affected bald eagles. TRRC will notify USFWS as soon as reasonably possible of any emergency maintenance activity within Management Zones 1 or 2 around an active bald eagle nest.

d. Planned maintenance activities, except regularly scheduled rail inspections, will not take place in Management Zones 1 or 2, or in Management Zone 3 within 1.5 miles of any active bald eagle nest, from February 1 (onset of courtship and nest building) until two weeks after hatching. After May 15 until the first observation of independent flight of the fledglings (usually no later than July 15), these activities will occur in the afternoons, if necessary. By afternoon, adult eagles have usually completed feeding the chicks and there would be minimal disruption of this activity. After fledging occurs, planned maintenance activities could occur anywhere within Management Zones 1, 2 and 3. The actual dates of hatching and fledging will be determined by monitoring each active nest, as discussed in the Biological Assessment.

e. Planned maintenance activities would continue anywhere along the TRRC Extension route in the Tongue River valley until late October-early November (arrival of migrant bald eagles). The arrival date will be determined yearly through consultation with the Montana Bald Eagle Work Group (MBEWG). Since wintering bald eagles are sensitive to disturbance at roost sites and during foraging (Harmata 1982; McGarigal 1988; MBEWG 1994; Stalmaster and Newman 1978), planned maintenance activities near these sites could be curtailed to minimize disturbance.

f. Certain planned maintenance activities, such as routine inspections of the rail line a minimum of two times per week, would necessarily have to occur yearlong, including during the February 1 - May 15 nesting period. Routine inspection trips will also be used to remove carrion from the rail line. These activities are expected to be of short duration, few in number, usually below the level of nests or roosts, and comparatively quiet. Therefore they are anticipated to have minimal effects to nesting, nonbreeding or wintering bald eagles (Grubb and King 1991; Steenhof 1978). Moreover, routine activity that occurs twice a week will be predictable to eagles.

g. TRRC will notify USFWS immediately of a major emergency maintenance activity that might result in prolonged disturbance to bald eagles, to determine if additional monitoring of the eagles would be needed.

h. TRRC employees engaged in routine inspection of the rail line (a minimum of two times per week) will remove train-killed deer or other large animals from the right-of-way, in order to protect wintering bald eagles feeding on such carrion, from mortalities by trains. Carrion will either be completely removed from the vicinity of the rail line, or will be placed at locations along or near the right-of-way where there would be no potential for mortalities from trains, per objective 1.3123 of the Pacific Bald Eagle Recovery Plan (USFWS, 1986).

(i). TRRC will prohibit trapping within its ROW. This measure would ensure that bald eagles are not accidentally caught in traps set for other animals.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that no more than two eagles during construction or 1 eagle per 2 years during operation will be incidentally taken. If, during the course of the action, this minimized level of incidental take is exceeded, such incidental take represents new information requiring review of reasonable and prudent measures provided. The ICC must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Conservation Recommendations

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding development of information. The recommendations provided here relate only to the proposed action and does not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

The following Conservation Recommendations are taken directly from the "white papers" that the TRRC has agreed to and submitted to the ICC on October 4, 1995. The "white papers" contain additional discussion and strategy on how these recommendations will be accomplished(appendix A).

1. TRRC (in consultation with the MBEWG and/or USFWS) would identify tracts of land along the TRRC Extension route and in neighboring tributaries for purchase for management as nesting waterfowl habitat.

2. TRRC (in consultation with the MBEWG and/or USFWS) would identify tracts of land along the TRRC Extension route and in neighboring tributaries for purchase for management as potential bald eagle nesting habitat.

Reinitiation Requirement

This concludes formal consultation on this action as outlined in your August 18, request. As required by 50 CFR 402.16, reinitiation of formal consultation is required if:

1. the amount or extent of incidental take is exceeded;
2. new information reveals effects of the agency action that may affect listed species or habitat in a manner or to an extent not considered in this opinion;
3. the agency action is subsequently modified in a manner that causes an effect to the listed species or habitat not considered in this opinion; or
4. a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must be stopped in the interim period between the initiation and completion of the new consultation if any additional taking is likely to occur.

11-22-95

ACTING

Kemper M. McMaster
Field Supervisor
Montana Field Office
U.S. Fish and Wildlife Service

Date

Literature Cited

Anderson, S.H. and C.T. Patterson. 1988. Characteristics of bald eagle winter roosts in Wyoming. Prairie Natur. 20(3): 147-152.

Bowerman, W.W. IV, T.G. Grubb, A.J. Bath, J.P. Giesy Jr., G.A. Dawson and R.K. Ennis. 1993. Population composition and perching habitat of wintering bald eagles, *Haliaeetus leucocephalus*, in northcentral Michigan. Canadian Field-Natur. 107(3): 273-278.

Chester, D.N., D.F. Stauffer, T.J. Smith, D.R. Luukkonen and J.D. Fraser. 1990. Habitat use by nonbreeding bald eagles in North Carolina. J. Wildl. Manage. 54: 222-234.

Elser, A.A., R.C. McFarland and D. Schwehr. 1977. The effect of altered streamflow on fish of the Yellowstone and Tongue Rivers, Montana. Old West Reg. Comm. Rep. 8, Yellowstone Impact Study.

Farmer, P.J., biologist, Western Technology and Engineering, Inc. February 23, 1992. Letter to Alan Newell, Historical Research Associates, Inc.

Grubb, T.G. 1980. An artificial bald eagle nest structure. USDA For. Serv. Res. Note RM-383.

Grubb, T. G. , King, R. M. 1991. Assessing Human Disturbance of Breeding Bald Eagles With Classification Tree Models. J. Wildl. Manage. 55(3):500-511

Hansen, P.L., R.D. Pfister, K. Boggs, B.J Cook, J. Joy and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Univ. Montana School of For., Montana For. and Conserv. Exp. Sta., Misc. Publ. No. 54.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, fish and Wildlife Enhancement. August 29, 1991. Letter to E.K. Kaiser, chief, Section of Energy and Environment, Interstate Commerce Commission.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. December 24, 1991. Letter to E.K. Kaiser, chief, Section of Energy and Environment, Interstate Commerce Commission.

Harms, D., state supervisor, Montana state office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. April 28, 1992. Letter to N. Stessman, acting regional director, U.S. Bureau of Reclamation, Billings, Montana.

Harmata, A.R. 1982. Behavior and ecology of wintering and migrant bald eagles in the Rocky Mountains. Job completion report, Montana Dept. Fish, Wildl. and Parks.

Interstate Commerce Commission. 1992. Draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Energy and Environ., Washington, D.C.

Interstate Commerce Commission. 1994. Supplement to draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Environ. Anal., Washington, D.C.

McGarigal, K. 1988. Human-eagle interactions on the lower Columbian River. M.S. thesis, Oregon St. Univ.

McMaster, K.M., field supervisor, Montana field office, U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana. November 10, 1994. Letter to Alan Newell, Historical Research Associates, Inc.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

Newell, A., Historical Research Associates, Inc. December 17, 1991. Letter to D. White, Section of Energy and Environment, Interstate Commerce Commission.

Palawski, D. for K. McMaster, field supervisor, Montana office, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement. December 28, 1989. Letter to Dana White, Section of Energy and Environment, Interstate Commerce Commission.

Phillips, R.L., A.H. Wheeler, J.M. Lockhart, T.P. McEneaney and N.C. Forrester. 1990. Nesting ecology of golden eagles and other raptors in southeastern Montana and northern Wyoming. U.S. Fish and Wildl. Serv., Fish and Wildl. Tech. Rep. 26, Washington, D.C.

Servheen, C.S. 1978. The status of the bald eagle in Montana. Unpubl. Rept., Univ. of Montana, Missoula. 4 pp.

Stalmaster, M.V. and J.R. Newman. 1978. Behavioral responses of wintering bald eagles to human activity. J. Wildl. Manage. 42: 506-513.

Steenhof, K. 1978. Management of wintering bald eagles. U.S. Fish and Wildl. Serv. Off. Biol. Serv. FWS/OBS-78/79.

USDI Bureau of Reclamation, Northern Cheyenne Tribe and Montana Department of Natural Resources and Conservation. 1995. Tongue River Basin Project Draft Environmental Impact Statement.

U.S. Fish and Wildlife Service. 1986. Recovery Plan for the Pacific bald eagle. U.S. Fish and Wildl. Serv., Portland, Oregon.

U.S. Fish and Wildlife Service. 1992. Fish and Wildlife Coordination Act report for the Tongue River Dam rehabilitation project. Montana state office, Helena.

16

U. S. Fish and Wildlife Service, Federal Register, 50 CFR Part 17,Wednesday July 12, 1995, Endangered and Threatened Species: Bald Eagle Reclassification; Final Rule 36000-36010

MAINTAIN/ENHANCE HABITAT INTEGRITY

Assumptions

The following assumptions are made for the purposes of this discussion:

- "Habitat" refers to nesting, roosting and perching sites comprised of riparian forest (primarily cottonwood *Populus deltoides*) along the Tongue River valley. This is a more limited definition than used in the Montana Bald Eagle Management Plan (MBEWG 1994). Other components of habitat, such as prey base, will be addressed in separate discussions.

  It is recognized that bald eagles may perch diurnally and may roost in trees (probably ponderosa pine *Pinus ponderosa*) in upland areas away from the Tongue River (e.g., Anderson and Patterson 1988), but such sites should not be affected by a rail line placed in the river valley.

- "Perch" sites refer to trees or other structures (cliffs, rock outcrops, poles, etc.) used by bald eagles during the day (MBEWG 1994), particularly when foraging along the Tongue River. It is expected that the most desirable perch sites will be close (<30 m) to the river bank (Steenhof et al. 1980). Perch trees may be larger and have greater DBH than neighboring trees (Bowerman et al. 1993) but are often shorter and smaller than roost trees (Steenhof 1978). Proximity to food sources (in this case, areas along the Tongue River that may concentrate prey species including fish and waterfowl, such as below dams, above and below large riffles, at oxbows or adjacent wetlands, etc.) may also be a criterion in perch site selection (Steenhof 1978).

- "Roost" sites refer to trees used overnight, perhaps communally (MBEWG 1994). Roost trees generally consist of large trees in dense stands with a more open understory than neighboring trees; well protected from the wind; located near the edge of the stand for ease of approach and entry, and perhaps as an aid in thermoregulation; yet well concealed from nearby areas of human activity (Chester et al. 1990; Harmata, 1982; Steenhof 1978; Steenhof et al. 1980).

- "Nest" sites refer to trees, cliffs, artificial structures, etc. used for nesting (MBEWG 1994). The most desirable nest trees along the Tongue River will generally be large cottonwoods.

- The target species of this discussion is cottonwood. Other, later successional species in the riparian forest (Hansen et al. 1995), such as green ash (*Fraxinus pennsylvanica*) and boxelder (*Acer negundo*), may be present in the forest and may be used, if appropriately placed, as perch sites by bald eagles but are less desirable for bald eagle roost and nest sites because of their shorter height and less substantial structure.

Objective

- Maintain or enhance cottonwood stands for bald eagle perch, roost and nest sites along the Tongue River in the vicinity of the Tongue River Railroad Company's (TRRC) proposed 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension).

Problems

- It is assumed that the Tongue River Basin Project would result in the continuing decline of mature cottonwood stands along the Tongue River (USBR et al. 1995), due to regulated flows which will reduce or eliminate the alluvium deposition necessary to establish new stands (Hansen et al. 1995), as well as continue to limit the intensity of periodic high flows and flood events, which alter stream courses by creating meanders and oxbows and therefore change the successional stages of riverbank vegetation.

- Current land uses (primarily agricultural uses for hay production and livestock grazing) limit the amount of land available for riparian forest and may affect the vegetation succession within any given stand.

Strategy

As discussed in the Biological Assessment (BA) for the TRRC Extension, TRRC (in consultation with the Montana Bald Eagle Working Group (MBEWG)) could identify tracts of land along the TRRC Extension route for purchase for management as bald eagle habitat. Criteria to be used to select such tracts could include:

- location near irrigation dams, natural riffle/run sequences, oxbows, etc. that would concentrate prey (fish and waterfowl);

- location in areas that would be "severed" by construction of the railroad. This would have two advantages: a) landowners who would otherwise have difficulty accessing these sites for agricultural management due to the railroad, might be receptive to selling such sites for wildlife management purposes; and b) isolating such sites with the railroad grade from other human disturbances might improve their attractiveness for less tolerant bald eagles; and

- presence of appropriately sized and aged stands of cottonwoods that would be available, or would have the potential to eventually develop as perch, roost or nest sites for bald eagles. Cottonwood trees would not necessarily have to be present, if the site could potentially be vegetated through plantings or other efforts with cottonwoods.

Tracts would be selected by reviewing aerial photos of the TRRC Extension route along the Tongue River valley. Potential sites would be identified and prioritized based on the above criteria. In some cases it may be desirable to visit a site (access permitting) to further analyze its suitability.

Once a tract has been purchased, it could be managed as potential bald eagle perching, roosting or nesting habitat by measures such as:

- the site could be fenced to exclude livestock, which would aid regeneration of cottonwoods. Once cottonwoods are re-established, livestock could resume grazing the area.
- through consultation with the MBEWG and/or groups such as the Montana Riparian-Wetland Association, more intensive management steps such as prescribed fire or planting cottonwoods could be undertaken if necessary to enhance the site; and
- depending on site conditions, it may be possible to enhance perching or nesting opportunities through the use of artificial structures including posts, poles or nest tripods (Grubb 1980).

Literature Cited

Anderson, S.H. and C.T. Patterson. 1988. Characteristics of bald eagle winter roosts in Wyoming. Prairie Natur. 20(3): 147-152.

Bowerman, W.W. IV, T.G. Grubb, A.J. Bath, J.P. Giesy Jr., G.A. Dawson and R.K. Ennis. 1993. Population composition and perching habitat of wintering bald eagles, *Haliaeetus leucocephalus*, in northcentral Michigan. Canadian Field-Natur. 107(3): 273-278.

Chester, D.N., D.F. Stauffer, T.J. Smith, D.R. Luukkonen and J.D. Fraser. 1990. Habitat use by nonbreeding bald eagles in North Carolina. J. Wildl. Manage. 54: 222-234.

Grubb, T.G. 1980. An artificial bald eagle nest structure. USDA For. Serv. Res. Note RM-383.

Hansen, P.L., R.D. Pfister, K. Boggs, B.J. Cook, J. Joy and D.K. Hinckley. 1995. Classification and management of Montana's riparian and wetland sites. Montana For. and Conserv. Exp. Sta., Univ. Montana School of For., Misc. Publ. No. 54, Missoula.

Harmata, A.R. 1982. Behavior and ecology of wintering and migrant bald eagles in the Rocky Mountains. Job completion report, Montana Dept. Fish, Wildl. and Parks.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

Steenhof, K. 1978. Management of wintering bald eagles. U.S. Fish and Wildl. Serv. Off. Biol. Serv. FWS/OBS-78/79.

Steenhof, K., S.S. Berlinger and L.H. Fredrickson. 1980. Habitat use by wintering bald eagles. J. Wildl. Manage. 44(4): 798-805.

IV

U.S. Bureau of Reclamation, Northern Cheyenne Tribe and Montana Department of Natural Resources and Conservation. 1995. Tongue River Basin Project draft environmental impact statement. Montana Dept. Natur. Resour. and Conserv., Helena.

MAINTENANCE SCHEDULING

<u>Assumptions</u>

The following assumptions are made for the purposes of this discussion:

- As discussed in the Biological Assessment for Tongue River Railroad Company's (TRRC) proposed 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension), rail line maintenance activities would fall into two general categories. The first would be comprised of non-emergency or planned activities, such as routine inspections, repair/replacement of rails, ties, ballast, etc., and maintenance of signs, lights, etc. The second category of maintenance activity would be emergency maintenance or repairs. The first category is foreseeable, while the second is not.

- A worst case scenario train derailment rate of 3-4 per 15 years has been projected for the TRRC Extension (ICC 1992). TRRC would reduce the likelihood of derailments by employing certain measures including: equipment maintained to high standards (i.e., first category of maintenance activities); frequent track inspections (again, first category of maintenance activities); high level of employee training and safety awareness; and the installation of guard rails (i.e., additional rails in the center of the track to keep derailed wheels in line) on railroad bridges (ICC 1992).

- Because the TRRC Extension's purpose is to transport coal, the primary hazardous materials carried on the TRRC Extension would be petrochemicals (diesel fuel and lubricants) used by the trains themselves. Transportation of other hazardous materials is not anticipated. However, because TRRC would be a common carrier railroad, it would be possible that materials other than coal (including hazardous materials) could eventually be transported. TRRC would be required to operate in full compliance with the Hazardous Materials Transportation Act (49 U.S.C. 1080 et seq.) and other applicable sate and federal laws governing the safe handling and storage of hazardous materials (ICC 1992).

<u>Objectives</u>

- Schedule planned maintenance activities in such a way as to <u>minimize</u> effects to migrant and breeding bald eagles along the TRRC Extension route, and to reflect the actual chronology of bald eagle use of the Tongue River valley.

- Provide for appropriate responses to train derailments to <u>minimize</u> the potential effect of hazardous material spills on bald eagle habitat, particularly the potential for impact to the aquatic-oriented prey base (fish and waterfowl).

Strategy

- Planned maintenance activities, except regularly scheduled rail inspections, would not take place in Management Zones 1 or 2, or in Management Zone 3 within 1.5 miles of any active bald eagle nest, from February 1 (onset of courtship and nest building) until two weeks after hatching. After May 15 until the first observation of independent flight of the fledglings (usually no later than July 15), these activities could occur in the afternoons, if necessary. By afternoon, adult eagles have usually completed feeding the chicks and there would be minimal disruption of this activity. After fledging occurs, planned maintenance activities could occur anywhere within Management Zones 1, 2 and 3. The actual dates of hatching and fledging would be determined by monitoring each active nest, as discussed in the Biological Assessment.

- Planned maintenance activities would continue anywhere along the TRRC Extension route in the Tongue River valley until late October-early November (arrival of migrant bald eagles). The arrival date would be determined yearly through consultation with MBEWG. Since wintering bald eagles are sensitive to disturbance at roost sites and during foraging (Harmata 1982; McGarigal 1988; MBEWG 1994; Stalmaster and Newman 1978), planned maintenance activities near these sites could be curtailed to minimize disturbance.

- Certain planned maintenance activities, such as routine inspections of the rail line a minimum of two times per week, would necessarily have to occur yearlong, including during the February 1 - May 15 nesting period. Routine inspection trips would also be used to remove carrion from the rail line. These activities would be expected to be of short duration, few in number, usually below the level of nests or roosts, and comparatively quiet. Therefore they would be anticipated to have minimal effects to nesting, nonbreeding or wintering bald eagles (Grubb and King 1991; Steenhof 1978). Moreover, routine activity that occurs twice a week will be predictable to eagles.

- Emergency maintenance or repairs cannot be foreseen and therefore cannot be planned to occur in periods that would minimize the effect to bald eagles. The degree of effect to bald eagles would be influenced by the kind of activity (for example, a train derailment vs. damaged lights or signs at public or private road crossings), magnitude and duration of the activity, the time of the year at which the activity occurs, the location at which it occurs, and the tolerance for disturbance displayed by the affected eagles. As discussed above, TRRC would minimize the occurrence of emergency maintenance activities by implementing sound operational practices; if the TRRC Extension would eventually carry hazardous materials, TRRC would implement additional procedures required by federal and state regulations.

- TRRC would notify USFWS and/or MBEWG immediately of a major emergency maintenance activity that might result in prolonged disturbance to bald eagles, to determine if additional monitoring of the eagles would be needed.

Literature Cited

Harmata, A.R. 1982. Behavior and ecology of wintering and migrant bald eagles in the Rocky Mountains. Job completion report, Montana Dept. Fish, Wildl. and Parks.

Interstate Commerce Commission. 1992. Draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Energy and Environ., Washington, D.C.

McGarigal, K. 1988. Human-eagle interactions on the lower Columbian River. M.S. thesis, Oregon St. Univ.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

Stalmaster, M.V. and J.R. Newman. 1978. Behavioral responses of wintering bald eagles to human activity. J. Wildl. Manage. 42: 506-513.

Steenhof, K. 1978. Management of wintering bald eagles. U.S. Fish and Wildl. Serv. Off. Biol. Serv. FWS/OBS-78/79.

ADDITIONAL MONITORING

As discussed in the Biological Assessment for Tongue River Railroad Company's (TRRC) proposed 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension), TRRC will employ a monitoring program to locate active bald eagle nests prior to construction of the TRRC Extension, and monitor these sites during construction of the railroad. After subsequent discussions with the Montana Bald Eagle Working Group (MBEWG), TRRC will expand the monitoring program in an effort to obtain more information about foraging patterns of breeding, nonbreeding and migrant bald eagles along the Tongue River valley in the vicinity of the TRRC Extension. This effort will include:

- Aerial surveys of the Tongue River from its confluence with the Yellowstone River to the upper end of the Tongue River Reservoir (approximately Decker, Montana) will be flown in December, January and February. Even though the TRRC Extension will run only from Decker to Ashland, the rest of the river will be flown to document any differences in prey availability and/or wintering eagle distribution in comparison to the TRRC Extension route. A fixed-wing aircraft will be used for the surveys. Information to be recorded will include: 1) locations of individual bald eagles (these sightings will also be used to help select cottonwood stands for habitat enhancement); 2) age structure of wintering eagles (i.e., adult vs. immature); 3) locations of nests; 4) locations of great blue heron and/or double-crested cormorant rookeries (potential eagle nest sites); 4) locations of prey (waterfowl) concentrations; 5) approximate numbers of prey at each site; 6) approximate species group composition of prey (e.g., geese, ducks (if possible, ducks will be differentiated into "puddle" ducks, diving ducks, mergansers, etc. This may not be possible from an aircraft), gulls, herons, etc.; 7) relative percent of open water; 8) physical features (dams, riffles, etc.) that may concentrate prey; 9) other potential prey species such as concentrations of turkeys or pheasants, prairie dog colonies, etc.; and 10) any concentrations of carrion (such as around feedlots).

- An aerial survey will be flown in April, prior to "leaf-out," to determine nesting activity and the approximate locations of non-nesting pairs (this latter information would also be usable in the selection of habitat enhancement sites).

- It may be possible to survey portions of the Tongue River along the TRRC Extension route in late June/early July to monitor waterfowl species composition and productivity (i.e., summer prey base). This survey would be done by canoe and would likely be defined by stream flows and access/egress points. Information to be collected would include: 1) waterfowl species composition; 2) brood size per observation; 3) numbers of apparently nonbreeding waterfowl present; and 4) numbers and composition of other potential species (herons, cormorants, etc.).

- If access to active bald eagle nests on private lands can be obtained, nest sites will be visited post-fledging to search for prey remains. This information, although qualitative, would provide some indication of food habitats at individual nest sites.

MAINTAIN/ENHANCE PREY BASE

Assumptions

The following assumptions are made for the purposes of this discussion:

- "Prey base" refers to both the diversity and total biomass of forage items consumed by bald eagles in the Tongue River valley along the Tongue River Railroad Company's (TRRC) proposed 41-mile rail line between Ashland and Decker, Montana (hereinafter called the TRRC Extension).

- The prey base for bald eagles in the Tongue River valley is primarily comprised of fish, waterfowl and carrion. The availabilities (numbers, location and ease of capture) of these three prey items are largely unknown but probably differ seasonally and yearly, as well as by location along the route. It is recognized that other prey items (e.g., ground squirrels, prairie dogs, rabbits, etc.) may also be taken (MBEWG 1994).

- The upland prey base away from the Tongue River valley (e.g., carrion, rabbits, etc.) may be seasonally important for bald eagles nesting in the valley but will not be addressed in this discussion because this prey base should be unaffected by construction and operation of the TRRC Extension.

- The nesting waterfowl prey base along the Tongue River valley appears to be habitat limited. For example, a review of USGS 7.5-minute topographic maps of the TRRC Extension route suggests that there are only 15-20 islands in the river, and 3-4 oxbows adjacent to the river, which might create backwaters suitable for nesting waterfowl.

- The nesting waterfowl prey base away from the Tongue River in the vicinity of the TRRC Extension is probably also limited by lack of habitat, since the only perennial tributary to the Tongue River along the TRRC Extension route is Hanging Woman Creek (ICC 1992). Small dams on ephemeral tributaries are probably too small to contribute significant numbers of nesting waterfowl. In addition, since most of these sites were constructed to livestock water supply, upland nesting habitat in the vicinity is usually limited.

- The migratory/wintering waterfowl prey base is probably a function of stream flows and weather. Flows in the Tongue River will be regulated by the Tongue River Basin Project to maintain certain minimums; additional instream flows may be purchased as a mitigation measure to this project (USBR 1995). Winter severity (particularly freezing water and snow depth in fields) may also affect the numbers of waterfowl using the river, and the duration of their use.

- Mitigation of waterfowl habitat (wetlands) immediately below the Tongue River Dam, as well as along the Tongue River Reservoir shoreline, has been proposed by the Tongue River Basin Project DEIS (USBR 1995). Therefore this discussion does not address these sites further.

- The primary source of carrion during operation of the TRRC Extension will be deer killed by trains. Carrion on lands not associated with the railroad, such as livestock on private lands, will remain an unpredictable source. While train/deer accidents are also unpredictable, it is assumed that they will occur, particularly during winter.

- Although the TRRC Extension will cross the Tongue River five times on bridges, the effects of bridge construction on the fisheries prey base are expected to be short-term, primarily as a result of displacement from the construction sites and sedimentation caused by instream activities.

- Maintaining and/or enhancing the fisheries prey base in the Tongue River has been addressed in the Tongue River Basin Project draft environmental impact statement (DEIS) (USBR 1995). The Montana Department of Fish, Wildlife and Parks (MDFWP) will be monitoring the effects of the Tongue River Basin Project on downstream fisheries. While this monitoring effort appears to be primarily oriented towards game fish species (USBR 1995), it seems reasonable to assume that nongame fish could be included in this monitoring effort through coordination between the Montana Bald Eagle Working Group (MBEWG) and MDFWP.

Objectives

- Maintain or enhance waterfowl habitat along the TRRC Extension route south of the Tongue River Dam, and/or in upland areas away from the rail line.

- Remove carrion from the rail line in such a manner as to eliminate or minimize the potential for mortalities of bald eagle from train strikes, while retaining this carrion as a potential food source.

Problems

- Foraging patterns of breeding, nonbreeding and migrant bald eagles along the Tongue River valley in the vicinity of the TRRC Extension route are essentially unknown.

- Opportunities to enhance waterfowl habitat in the vicinity of the route are physically limited. To support sufficient numbers of nesting or migratory waterfowl to attract foraging bald eagles, such sites should probably several acres in individual or combined size.

Strategy

TRRC (in consultation with the Montana Bald Eagle Working Group (MBEWG)) could identify tracts of land along the TRRC Extension route and in neighboring tributaries for purchase for management as nesting waterfowl habitat. Criteria that could be used to select such tracts in the river valley could include:

- location of existing oxbows or other wetlands near the rail line that have limited agricultural productivity (grazing or hay/crop production). Landowners may be receptive to selling such areas for use as waterfowl management sites.

- location of areas that would be "severed" by construction of the railroad. Landowners who would otherwise have difficulty accessing these sites for agricultural management due to the railroad, might be receptive to selling such sites for wildlife management purposes. If such sites appear to have a comparatively high water table due to their location near the river, it may be possible to develop wetlands by dredging or blasting.

- ephemeral drainages crossed by the rail line where the placement of culverts through the railroad grade could be adjusted to create wetlands.

Criteria that could be used to select such tracts away from the river valley could include:

- size of the ephemeral drainage, as determined from topographic maps. It would be desirable to have a large enough drainage to provide sufficient runoff to fill a sizeable wetland.

x

- availability of water rights on drainages that might be selected for wetland creation or enhancement.

Tracts would be selected by reviewing aerial photos of the TRRC Extension route along the Tongue River valley, and topographic maps of the tributary drainages. Engineers involved in the design of the railroad grade would be consulted during the examination of potential wetlands created along the railroad grade. Potential sites would be identified and prioritized based on the above criteria. In many cases it would be necessary to visit a site (access permitting) to further analyze its suitability.

Once a tract has been purchased, it could be managed as potential bald eagle perching, roosting or nesting habitat by measures such as:

- the site could be fenced to exclude livestock, which would aid regeneration of cottonwoods and understory species;

- it is assumed that natural revegetation of a created or enhanced wetland would occur quickly. In some cases it could be beneficial to plant appropriate wetland vegetation;

- small islands or other structures could be placed in certain wetlands to enhance waterfowl nesting; and

- depending on the site and neighboring habitat, it may be desirable to erect artificial perches for bald eagles at appropriate distances from the wetland.

As discussed in the Biological Assessment (BA) for the TRRC Extension, TRRC employees engaged in routine inspection of the rail line (a minimum of two times per week) would remove train-killed deer or other large animals from the rail line. These employees will have to use discretion in disposal of carrion. Depending on the location of the dead animal, size of remains, etc., it may be appropriate to move the carrion off the tracks but retain it within the railroad right of way. In other cases it may be appropriate to move the carrion to a selected site further from the right-of-way where the potential for bald eagle mortalities will be lessened.

Literature Cited

Interstate Commerce Commission. 1992. Draft environmental impact statement, Finance Docket No. 30186 (Sub-No.2), Tongue River Railroad Company - construction and operation of an additional rail line from Ashland to Decker, Montana. Interst. Commerce Comm., Section of Energy and Environ., Washington, D.C.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

U.S. Bureau of Reclamation, Northern Cheyenne Tribe and Montana Department of Natural Resources and Conservation. 1995. Tongue River Basin Project draft environmental impact statement. Montana Dept. Natur. Resour. and Conserv., Helena.

CONSTRUCTION TIMING CONSTRAINTS

Assumptions

As discussed in the Biological Assessment (BA) for the TRRC Extension, TRRC would restrict construction activities within Management Zones 1, 2 and 3 (MBEWG 1994) around active bald eagle nests. After further consultation with members of the Montana Bald Eagle Working Group (MBEWG), the following assumptions are made for the purposes of this discussion:

- Although based on a small sample size (n = two nests), bald eagle nesting chronology along the Tongue River appears to be: 1) courtship and nest building probably begin in early February; 2) egg laying probably begins in the second week of March; 3) a complete clutch has been laid by March 25; 4) the most sensitive period to disturbance (nest building, egg laying and incubation) therefore extends from February 1 to May 10-15; and 5) fledging occurs by July 15.
- Other bald eagle nests in Recovery Zone 41 (lands drained by the Yellowstone River and its tributaries from the Bighorn River to the North Dakota border) follow this same general chronology.
- In any given year, or at any given active bald eagle nest, nesting chronology may differ from the above time frame.
- TRRC would institute a monitoring program at each active bald eagle nest along the TRRC Extension route, as discussed in the Biological Assessment.
- Distance is the most important aspect of human disturbance to bald eagles; in descending order, the most disturbing human activities are pedestrian (people walking), aquatic (people in canoes or boats, particularly in bald eagle foraging areas), vehicle, noise and aircraft (Grubb and King 1991).
- Foraging bald eagles are more sensitive to disturbance than non-feeding eagles (Harmata 1982; Knight and Knight 1984; McGarigal 1988).
- Low intensity activities associated with construction of the TRRC Extension include field inspections, surveying the route, environmental monitoring, etc. Low intensity activities will involve pedestrian and vehicle disturbances, but will have little noise. High intensity construction activities include heavy construction vehicles (e.g., bulldozers, scrapers, trucks hauling ballast and other materials, etc.), pile driving for bridges (e.g., cranes), etc. However, blasting is not foreseen at any location along the route.

Objective

- Adjust the TRRC Extension construction schedule to reflect the actual bald eagle nesting season on the Tongue River.

XII

Strategy.

- There would be no construction activities (low or high intensity) within Management Zones 1 and 2 at any active bald eagle nest during the February 1 - July 15 period, or until five days after the first observation of independent flight, as recorded by the nest monitoring effort described in the Biological Assessment.

- Low intensity activities could occur in Management Zone 3 beyond 1.5 miles of any active nest from February 1 until initiation of hatching (two weeks after hatching). High intensity activities would not occur in Management Zone 3 around any active nest during this period.

- Once monitoring confirms that fledging has occurred (i.e., five days following the first observation of independent flight, or approximately July 15), high intensity activities could occur anywhere within Management Zones 1, 2 and 3.

- Since nesting chronology may vary from nest to nest and year to year, the final determinant of construction activities in the vicinity of any active nest will be the nest monitoring program discussed in the Biological Assessment.

Literature Cited

Grubb, T.G. and R.M. King. 1991. Assessing human disturbance of breeding bald eagles with classification tree models. J. Wildl. Manage. 55(3): 500-511.

Harmata, A.R. 1982. Behavior and ecology of wintering and migrant bald eagles in the Rocky Mountains. Job completion report, Montana Dept. Fish, Wildl. and Parks.

Knight, R.L. and S.K. Knight. 1984. Responses of wintering bald eagles to boating activity. J. Wildl. Manage. 48(3): 999-1004.

McGarigal, K. 1988. Human-eagle interactions on the lower Columbian River. M.S. thesis, Oregon St. Univ.

Montana Bald Eagle Working Group (MBEWG). 1994. Montana bald eagle management plan. USDI Bur. Recl., Billings, Montana. 104 pp.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

Fish and Wildlife Enhancement
301 South Park
P.O. Drawer 10023
Helena, Montana 59626
Federal Building, U.S. Courthouse

M.24 ICC Tongue River RR

August 29, 1991

Ms. Elaine K. Kaiser, Chief
Section of Energy and Environment
Interstate Commerce Commission
Washington, DC 20423

Dear Ms. Kaiser:

This responds to your July 29, 1991 letter concerning the environmental impact statement (EIS) to be prepared regarding the proposed Tongue River Railroad "Extension" (i.e., from near Ashland to near Decker, Montana). Your letter requested our comments on several aspects of the proposal. For convenience, we have attempted to organize our response into categories, as follows:

Threatened and Endangered Species - You requested our comments on the status of Historical Research Associates' (HRA) Section 7 compliance thus far.

In this regard, personnel from the Billings Suboffice of the U.S. Fish and Wildlife Service (Service) met with HRA representatives on January 18, 1990 to informally discuss the proposed rail extension. Threatened and endangered species and other topics were discussed, including Section 7 compliance procedures. Previously, in response to a Federal Register Notice of Intent by the Interstate Commerce Commission (ICC) to prepare an EIS, dated November 17, 1989, we provided a list of species that should be considered in connection with the proposal (our letter dated December 28, 1989, and addressed to Ms. Dana White).

As far as our records indicate (and memory serves), there has been no further communication between this office and HRA, except we believe for a couple of informal telephone conversations between the various parties present at the January 18, 1990 meeting in Billings. These occurred shortly after the meeting itself.

Because more than 180 days has elapsed since our December 1989 list of species was provided to you and we have not reviewed biological assessments prepared by ICC or your designated agents, we are hereby reconfirming the list provided to you at that time (i.e., bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), and black-footed ferret (*Mustela nigripes*)). Our assumption in this regard is that your July 29, 1991 letter constitutes a request for an updated list of the relevant species. Please see our original letter (December 28, 1989) for further procedural guidance. In this regard, please note that the Service is required to review and concur in the eventual findings of your biological assessments.

The Exhibit H to the Environmental Report prepared by HRA, and which accompanied your July 29, 1991 letter, indicates that some impacts will occur to one or more prairie dog towns that exist in the project right-of-way north of Birney. It is further stated that pre-construction surveys will be conducted according to U.S. Fish and Wildlife Service (Service) guidelines, "to assure that construction does not impact prairie dog complexes greater than 80 acres".

In this regard, it is noted that, recently, a prairie dog inventory was conducted by the Bureau of Indian Affairs (BIA) and Northern Cheyenne Tribe (NCT), primarily on the Northern Cheyenne Indian Reservation. A very large (approximately 10,000-acre) complex was identified and mapped. This complex is located primarily along the eastern boundary of the reservation. Although the river intervenes, it is quite possible that any prairie dog towns lying "north of Birney" that would be impacted by the railroad may be part of this large complex. Please see the U.S. Fish and Wildlife Service's survey guidelines for the black-footed ferret, dated April 1989, especially Appendix II (copy enclosed). If any prairie dog towns impacted by the railroad are, indeed, within the boundary of the large complex identified by the BIA/NCT inventory, your biological assessment for the black-footed ferret would need to address not only the potential for direct impacts to ferrets, but whether or not the potential of the complex to support black-footed ferret recovery may be affected. In that connection, we note the following:

(1) The Service believes that 175,000 to 200,000 acres of prairie dog habitat at ten or more sites (1,000 acres or greater) in the west should be managed for black-footed ferret recovery.

(2) The Service wants to evaluate black-footed ferret recovery potential of all prairie dog complexes of over 1,000 acres.

(3) Prairie dog complexes greater than or equal to 1,000 acres that will be affected by federally proposed actions or funded programs must be considered by the Service as "essential" to the recovery and survival of the black-footed ferret until these areas have been specifically evaluated and determined not to be essential.

(4) Federal "actions" which reduce the integrity of potential black-footed ferret recovery sites or recovery options are considered as "adverse affects" requiring formal consultation.

(5) The jeopardy standard for the ferret in these cases depends on the presence of the species in the area (if found during surveys) and/or the magnitude of the effect of the actions on prairie dog density and distribution in the affected prairie dog complex. Significant changes in this habitat may be considered as jeopardy because loss of habitat needed for recovery also jeopardizes the survival of this species in the wild.

Concerning the bald eagle, please see our comments regarding the "Four Mile Creek Alternative", later herein.

Fish and Wildlife Impacts (General) - Your July 29 letter requested our comments on an array of (non-threatened/endangered) fish and wildlife resources. We have not been actively involved in assessing the potential impacts of the railroad on such resources, and as a consequence, we are in a position to comment only very generally.

In general, the information on fish and wildlife contained in HRA's Exhibit H appears accurate and reliable. Much of it is descriptive in nature, however. Information on impacts, and on mitigation planning and commitments, are rather general for the most part. This may only reflect the stage of planning, but it is hoped that the EIS will reveal both impacts and mitigation measures in more detail. For example, Table 4-30, which shows the location of proposed wetland impacts, is very useful. However, a reasonable estimate of the acreages of wetland to be impacted would add much to the perspective, some discussion of how the impacts will be minimized appears warranted, and a more specific commitment to effective mitigation of unavoidable impacts appears appropriate (we note that the general nature of mitigation opportunities for wetland impacts are well presented; however, will these be accomplished exclusively through the Section 404 process?). Further attention to other fish and wildlife mitigation needs appears desirable in the EIS as well, such as the specific protective measures to be taken in the confined canyon area where several river crossings may create potentially significant sedimentation of a reach of the Tongue River. A discussion of how these measures will be effectively implemented (assured) would be useful.

Concerning the necessity for fencing the railroad, which fairly closely parallels the Tongue River for much of its route, we suggest it may be appropriate to design the fencing so it will not constitute a hazard or block to deer migrating between the Tongue River riparian zone and adjacent uplands; however, we suggest that you consult with appropriate representatives of the Montana Department of Fish, Wildlife and Parks (MDFWP) on this matter.

Four Mile Creek Alternative - You asked our opinion regarding this route (i.e., as an alternative to the part of the railroad "Extension" project planned for the Tongue River Canyon).

We have not, of course, had a chance to examine this alternative in detail. From what is known, however, it appears clear that impacts to fish and wildlife resources, and to Tongue River based recreation, would be considerably lessened.

As you know, much of river based recreation (not the reservoir portion) in the area occurs in the canyon where the MDFWP operates the Tongue River State Recreation Area, which would apparently be rather dramatically impacted if the canyon route is used. Adverse impacts on the most scenic portion of the river would also be avoided by the Four Mile Creek alternative.

The Four Mile Creek route would also avoid most (all but one?) of the projected crossings of Tongue River, thus almost eliminating the expected stream channel disturbances and riparian zone impacts of the project. Threats of pollution (sedimentation during and after construction, the use of herbicides along the right-of-way during long-term maintenance activities, and the potential for hazardous or toxic spills during construction or train derailing in the future) would be eliminated. We also note that a number of bald eagles are known to winter in the canyon area; these would be susceptible to disturbance during and after project construction, a matter that should be addressed in your biological assessment for this species. Obviously, this element of disturbance would be eliminated, along with the possibility of a toxic spill that might impact wintering eagle's food base (largely fish and waterfowl) in the fairly open water in the river canyon.

Fairly large numbers of waterfowl are known to use the Tongue River canyon area (noted in Exhibit H), including during the winter. These birds would be vulnerable to any toxic spills occurring as a consequence of the railroad being sited in the canyon.

We know of no potential impacts to fish and wildlife that are anything close to being of comparable extent in connection with the Four Mile Creek route. From a fish and wildlife perspective, the Four Mile Creek route appears clearly preferable.

We appreciate the opportunity to comment at this point in project planning. Informal questions regarding this letter may be directed by Mr. Gary Wood of our Billings Suboffice 406-657-6750 (FTS: 585-6750).

Sincerely,

Dale Harms
State Supervisor
Montana State Office
(406) 449-5225

JGW/dc

Attachment (1)

cc: Suboffice Coordinator, USFWS, Fish & Wildlife Enhancement (Billings, MT)
Montana Dept. of Fish, Wildlife & Parks (Miles City, MT)

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
100 North Park, Suite 320
Helena Montana 59601

IN REPLY REFER TO

May 4, 1994

ES-61130-Billings
M.24-ICC Tongue River RR

Ms. Elaine K. Kaiser, Chief
Section of Energy and Environment
Interstate Commerce Commission
Washington, DC 20423

Dear Ms. Kaiser:

30186

We have reviewed the Supplement to the Draft Environmental Impact Statement for the Tongue River Railroad Company Finance Docket No. ~~201~~ (Sub. no. 2) dated March 17, 1994. The purpose of the Supplement is to change the identified environmentally preferred alternative from the Four Mile Creek Alternative listed in the DEIS to the route proposed by the Tongue River Railroad Company (TRRC).

This change is being proposed because the Interstate Commerce Commission's Section of Environmental Analysis has now determined that the Four Mile Creek Alternative would have more unmitigable adverse consequences on the environment than the Tongue River Railroad Company proposed route through the Tongue River Canyon.

The Fish and Wildlife Service (Service) provided comments to the Interstate Commerce Commission (ICC) in a letter dated August 29, 1991. A summary of the Service's comments on the Four Mile Creek Alternative follows:

- Impacts to fish and wildlife resources and to Tongue River recreation would be less;
- Adverse impacts to Tongue River State Recreation Area would be avoided;
- Adverse impacts to the scenic canyon would be avoided;
- Tongue River crossings would be reduced to one;
- Less channel disturbance and riparian habitat impacts;
- Reduced pollution threats; re: sedimentation, toxic spills, herbicide use;
- Reduced impacts to wintering bald eagles;
- Four Mile Creek Alternative preferable from fish and wildlife perspective.

These comments still reflect the Service's position on the Four Mile Creek Alternative. We do not agree that the potentially significant environmental impacts addressed on pages 10 and 11 of the Supplement justify changing the environmentally preferred alternative. It is the Service's position that construction impacts associated with building the railroad through up the canyon will be far more difficult to mitigate than adverse impacts associated with the Four Mile Creek Alternative. Obviously, none of the adverse environmental impacts would occur if a "No Build" alternative was selected. In addition, two bald eagle nests, No. 41005-01 and No. 41005-02, that could be impacted by the proposed project have been established since 1991. Nest 41005-01 is about two miles downstream of the confluence of the Four Mile Creek and nest 41005-02 is about 3.5 miles upstream of the confluence. Nest 41005-02 was active last year and nest 41005-01 was active the year before. Nest 41005-02 is active again this year. It appears that construction of the Four Milè Creek alternative would cause less impacts to wintering and nesting bald eagles than the proposed route.

Regarding compliance with the Endangered Species Act (ESA) and the preparation of the biological assessment concerning threatened and endangered species, it is our understanding that Historical Research Associates (HRA) has been designated the "non-federal representative" for the ICC. The rules and regulations (50 CFR Part 402) which guide interagency cooperation in application of the ESA define "designated non-Federal representative" as a person designated by the Federal agency as a representative to conduct informal consultation and/or to prepare any biological assessment.

Biological assessments are required for "major construction activities" and are designed to assist Federal agencies in determining whether section 7(a)(2) consultation should be initiated by identifying endangered or threatened species that may be present in the area affected by proposed Federal actions and by identifying impacts of those projects on such species. Biological assessments should be viewed as a tool used to identify impacts to species or habitat so that a decision can be made as to whether a proposed action is likely to adversely affect listed species or critical habitat. Further, biological assessments can be used to determine whether a conference or formal consultation is required.

Procedures require HRA, as ICC's designated non-Federal representative, to submit to the Service a written request for a list of any listed/proposed species or designated/proposed critical habitat that may be present in the action area or HRA may submit to the Service a written notification of the species and critical habitat that are being included in the biological assessment.

The Service provided the ICC with a list of threatened and endangered species in correspondence dated December 28, 1989. This list was reconfirmed on August 29, 1991. Because more than 180 days has elapsed since our August 1991 list of species was provided to you and we have not reviewed biological assessments prepared by ICC or your designated agent, we are hereby reconfirming the list provided (i.e. bald eagle (Haliaeetus leucocephalus), peregrine falcon (Falco peregrinus), and black-footed ferret (Mustela nigripes).

The Service further clarifies that ICC must retain the responsibility to initiate formal consultation along with its ultimate responsibility to ensure that its actions are not likely to jeopardize the continued existence of listed species. ICC's designation of HRA as their non-Federal representative to conduct informal consultation does not lessen these responsibilities or eliminate ICC's duty to review its actions. ICC must still review the work products (informal consultation records and evaluate the scope and contents of biological assessments) and independently reach its own conclusions and decisions. HRA as the non-Federal representative may be responsible (at ICC's discretion) for the ground work (data compilation, synthesis, developing conservation measures, recommendations, and producing draft biological assessments for ICC). HRA must then submit draft biological assessments to ICC for their review and ICC must determine, based upon its review and analysis of the project biological assessment, if formal consultation is required because the ultimate responsibility for compliance with section 7 of the ESA remains with ICC.

During the last few days we have had two phone conversations with Mr. Alan Newell of HRA. Mr. Newell stated that it was his impression that the agencies had agreed that the biological assessment need not be done until they had completed the third phase of engineering and had obtained right-of-way. Please note that the Service in our December 24, 1991 letter regarding section 7 compliance stated our preference that section 7 compliance be completed and included in National Environmental Compliance Act documents. Since we now know that bald eagle nests have been established in close proximity to the preferred alternative identified in the Supplemental EIS and have additional data regarding black-footed ferrets we recommend that a biological assessment be prepared and section 7 compliance be completed and included in final NEPA documents. The Service is available to assist ICC in assembling existing data regarding threatened and endangered species occurrence in the proposed project area.

We would also like to mention that our office is an active member on the mitigation/enhancement team for the Northern Cheyenne Indian Water Rights Settlement Act(Act) of 1992. The goal of the team is to develop and implement the enhancement/mitigation aspects of the (Act) of 1992 with emphasis on maximizing fish and wildlife values while restoring, creating, and improving wetland/riparian habitat along the Tongue River in Montana. Congress has authorized the expenditure of $3.5 million with the proposed $1.1 million non-federal match for a total of $4.6 million to enhance fish and wildlife values along the Tongue River. These projects will need to be coordinated carefully to assure there are no unnecessary conflicts.

We appreciate the opportunity to comment at this point in project planning. Informal questions regarding this letter may be directed by Mr. Steve Oddan of our Billings Suboffice 406-657-6750.

Sincerely,

Kemper M. McMaster
Field Supervisor
Montana Field Office

cc: Suboffice Coordinator, USFWS, Fish & Wildlife Enhancement (Billings, MT)
Montana Dept. of Fish, Wildlife & Parks (Miles City, MT)
Steve Potts, EPA, (Helena, MT)

INTERSTATE COMMERCE COMMISSION
Washington, DC 20423

OFFICE OF ECONOMIC AND ENVIRONMENTAL ANALYSIS

June 29, 1995

Mr. Kemper M. McMaster
Field Supervisor
Montana Field Office, Ecological Services
U.S. Fish and Wildlife Service
100 North Park, Suite 320
Helena, MT 59601

Re: ICC Finance Docket 30186 (Sub No. 2) Tongue River Railroad Company - Construction and Operation of Additional Rail Line Ashland to Decker, MT

Dear Mr. McMaster:

Enclosed is the Biological Assessment (BA) for the Tongue River Railroad Company's (TRRC) proposed construction and operation between Ashland and Decker, Montana. Pursuant to the regulations implementing the Endangered Species Act (ESA) at 50 CFR 402.08, the BA has been prepared by Historical Research Associates, Inc. (HRA), the non-Federal representative, and Western Technology and Engineering, Inc., HRA's sub-contractor. The BA addresses the potential effects from the construction and operation of TRRC's preferred railroad alignment on the four endangered species which could occur in the project area. The four endangered species are bald eagle, peregrine falcon, black-footed ferret, and pallid sturgeon.

The BA develops mitigation and concludes that the proposed construction and operation is not likely to adversely affect any of the four endangered species. As the Federal resource agency with expertise on threatened and endangered species, we rely on your office for further evaluation.

We formally seek your opinion regarding the accuracy of the BA's analysis, the scope of the mitigation, and whether you concur with the determination that the construction and operation of TRRC's preferred railroad alignment is not likely to adversely affect any of the species.

Your comments will assist us in complying with the mandates of ESA and offer guidance for the completion of the environmental review process in this proceeding. We request that you provide us with your comments within 30 days of receipt of the BA. If you have any questions, please contact Ms. Dana White at (202) 927-6214. Thank you for your continuing cooperation.

Sincerely yours,

Milan P. Yager

Milan P. Yager
Director

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
100 North Park, Suite 320
Helena Montana 59601

IN REPLY REFER TO
ES-61130-Billings
M.24-ICC Tongue River RR

July 12, 1995

Mr. Milan P. Yager Director
Office of Economic and Environmental Analysis
Interstate Commerce Commission
Washington, DC 20423

Dear Mr. Yager:

We have reviewed the Biological Assessment (BA) for the Tongue River Railroad Company ICC Finance Docket No. 30186 (Sub. no. 2) - Construction and Operation of Additional Rail Line Ashland to Decker, MT dated June 1995 and your cover letter dated June 29, 1995.

As stated in your cover letter the BA was prepared by Historical Research Associates, Inc. (HRA), the non-Federal representative, and Western Technology and Engineering, Inc., HRA's sub-contractor. The BA addresses the potential effects of construction and operation of the railroad on the four endangered species in the project area (bald eagle, peregrine falcon, black-footed ferret, and pallid sturgeon). The BA concludes that the proposed construction and operation of the railroad is not likely to adversely affect any of the four endangered species. Your June 29 letter asks for Fish and Wildlife Service (Service) concurrence in these determinations.

We believe the document accurately addresses potential impacts to the listed species. We also concur with Historical Research Associates, Inc's determination that the proposed project is not likely to adversely affect peregrine falcon, black-footed ferret or pallid sturgeon. The Service however, does not concur with HRA's is not likely to adversely affect determination for the bald eagle. Although management measures proposed by Tongue River Railroad (i.e. construction timing, monitoring, purchasing tracts of land for management of potential bald eagle nesting habitat) are positive and should help reduce potential impacts to bald eagles, the close proximity of the proposed railroad to bald eagle Nest 03 may cause abandonment of the nest or premature fledging of chicks. We therefore request that the Interstate Commerce Commission initiate formal consultation with this office under section 7 of the Endangered Species Act of 1973 (.PL. 93-205), as amended.

Questions regarding this letter may be directed to Mr. Steve Oddan of our Billings Suboffice 406-247-7366.

Sincerely,

Kemper M. McMaster
Field Supervisor
Montana Field Office

cc: Suboffice Coordinator, Ecological Services (Billings, MT)

C-94

INTERSTATE COMMERCE COMMISSION
Washington, DC 20423

OFFICE OF ECONOMIC AND ENVIRONMENTAL ANALYSIS

August 18, 1995

Mr. Kemper M. McMaster
Field Supervisor
Montana Field Office
U.S. Fish and Wildlife Service
100 North Park, Suite 320
Helena, MT 59601

Re: ICC Finance Docket 30186 (Sub No. 2) - Tongue River Railroad Company - Construction and Operation of an Additional Rail Line Ashland to Decker, MT

Dear Mr. McMaster:

In response to your letter to Milan Yager, dated July 12, 1995, and on behalf of the Interstate Commerce Commission, I am initiating formal consultation with the U.S. Fish and Wildlife Service pursuant to the requirements of Section 7 of the Endangered Species Act, PL 93-205, as amended.

Formal consultation involves the Tongue River Railroad Company's (TRRC's) proposed action before the Interstate Commerce Commission (Commission) to construct and operate an additional rail line from Ashland to Decker, Montana. There are four endangered species in the project area: bald eagle, peregrine falcon, black-footed ferret, and pallid sturgeon.

Your letter responded to our request for your opinion regarding the Biological Assessment (BA) prepared for this proposal. You stated that you agree that the BA accurately addresses potential impacts to the listed species and you concurred with the determination that the proposed project is not likely to adversely affect peregrine falcon, black-footed ferret or pallid sturgeon. However, you did not concur with the BA's determination that the project is not likely to adversely affect the bald eagle. As you stated, although proposed management measures in the BA are positive and should help reduce potential impacts to bald eagles, the close proximity of the railroad's preferred alignment to bald eagle Nest 03 may cause abandonment of the nest or premature fledging of chicks.

To comply with the requirements to initiate formal consultation, we have responded to the following:

1. Description of the Proposed Action and the Affected Area.

The proposed action involves TRRC's application before the Commission in Finance Docket 30186 (Sub No. 2) to construct and operate an approximately 41-mile rail line from Ashland to Decker, Montana. The proposed rail line would serve as an extension to TRRC's already-approved but not yet built 89-mile rail line from Miles City to Ashland, Montana.

There are two possible alignments and a "no build" alternative. The two alignments are TRRC's preferred alignment and the Four Mile Creek Alternative. Please see the attached map. TRRC's preferred alignment generally follows the Tongue River and passes around the Tongue River Reservoir to the west to connect with an existing rail line in the Decker area. TRRC's preferred route involves the construction of five bridges and a tunnel.

The Four Mile Creek Alternative is the only alternative TRRC considers feasible because of the surrounding terrain. The Four Mile Creek Alternative diverges from TRRC's preferred alignment at the confluence of the Tongue River and Four Mile Creek. The Four Mile Creek Alternative would avoid the Tongue River Dam and the approximate 10-mile segment of the Tongue River that includes the Tongue River canyon, removing the need to construct the five bridges and the tunnel.

The "no build" or no action alternative would deny TRRC's application.[1]

Detailed descriptions of the two construction/operation alignments, as well as the "no build" alternative, are included in the two environmental documents which have been prepared for this proceeding: the Draft Environmental Impact Statement, served July 17, 1992, and the Supplement to the Draft Environmental Impact Statement, served March 17, 1994. These documents were prepared by the Commission's Section of Environmental Analysis (SEA), the office responsible for completing the environmental review process. Copies of both documents are attached.

---

[1] The "no build" alternative would be environmentally neutral since none of the potential environmental impacts associated with the proposed extension would occur. However, the previously authorized 89-mile line from Miles City to Ashland, designed to serve new mines in Montana, could still be constructed and operated. Moreover, the present movement of coal from the Decker area would be unaffected and would continue to be transported along the existing Burlington Northern line which now serves the Powder River Basin.

2. <u>Description of Listed Species or Habitat That May Be Affected</u>.

There are four endangered species in the project area: bald eagle, peregrine falcon, black-footed ferret, and pallid sturgeon.

TRRC's preferred alignment and the Four Mile Creek Alternative are located in the Tongue River Basin, a sub-drainage of the Yellowstone River Basin. Originating in the Big Horn Mountains in Wyoming, the Tongue River flows northward into Montana to its confluence with the Yellowstone River near Miles City.

The Tongue River valley is bordered by hills and procellanite-capped buttes that rise 200 to 500 feet above the valley bottom. Precipitation is very light. In addition to the Tongue River, the Tongue River Reservoir and Dam near the Montana-Wyoming border is a major water feature of the basin. Downstream from the reservoir are numerous drainages that are generally intermittent. In Montana, the flow of the Tongue River is controlled by the Tongue River Reservoir and Dam.

The Tongue River cuts through a narrow, twisting valley and canyon from the Tongue River Reservoir and Dam north to its confluence with Four Mile Creek, a distance of about 10 miles. Because the river channel is narrow and fairly deep along this section, portions of the river do not freeze, providing important winter habitat for waterfowl and other wildlife.

Over 90 percent of the land in the Tongue River valley is used for agriculture, principally family-owned cattle ranching. The four principal counties affected by the proposed extension are Big Horn, Custer, Powder River and Rosebud counties, with overall sparse population.

The Northern Cheyenne Indian Reservation is located in Rosebud and Bighorn counties, with the Tongue River forming the Reservation's eastern boundary. Besides the Northern Cheyenne, the Crow, Sioux and Arapaho traditionally lived and hunted throughout the entire project area. The proposed TRRC rail line extension would be located on the eastern shore of the Tongue River and would not directly cross over the Northern Cheyenne Reservation.

3. <u>The Manner Listed Species or Habitat May Be affected, Including Cumulative Effects.</u>

To assist the SEA staff in determining the potential impacts to endangered species from the proposed railroad construction and operation, Historical Research Associates, Inc., (HRA) of Missoula, Montana (with Western Technology and Engineering, Inc.

of Helena, Montana, as HRA's sub-contractor) was designated as the non-Federal representative to prepare a Biological Assessment (BA). SEA asked HRA to work with the U.S. Fish and Wildlife Service in preparing the BA.

The BA which SEA formally submitted to your office, dated June 1995, discusses only TRRC's preferred alignment and concludes that the proposed construction and operation of TRRC's preferred alignment is not likely to adversely affect any of the four endangered species. SEA requested your office's opinion regarding the accuracy of the BA's analysis, the scope of the mitigation, and whether you concur with the determination that the construction and operation of TRRC's preferred alignment is not likely to adversely affect any of the endangered species.[2]

In your letter to me, dated July 12, 1995, you made the determination that the proposed project is not likely to adversely affect the peregrine falcon, black-footed ferret or pallid sturgeon. However, because of possible adverse impacts to bald eagles in the area, you requested that the Commission initiate formal consultation.

Please let us know if you require another copy of the BA.

4. Other Relevant Information.

As you know, the Tongue River Dam and Reservoir are scheduled to be repaired and enlarged. In June 1995, the U.S. Bureau of Reclamation (USBR) issued a Draft Environmental Impact Statement (USBR Draft EIS) regarding this project. The USBR Draft EIS included discussions of the proposed TRRC extension and possible cumulative effects of railroad construction and operation which could occur simultaneously with the dam and reservoir repair project. A Biological Assessment was attached to the USRB Draft EIS and concluded that the dam and reservoir repair project would not adversely affect the bald eagle, peregrine falcon, piping plover, least tern, pallid sturgeon or black-footed ferret.

---

[2] After numerous revisions to the BA and consultations with HRA, SEA still tended to believe that some of the BA's conclusions did not flow from the discussion of potential impacts. It seemed to the SEA staff that the proposed railroad construction and operation could adversely affect the bald eagle. We did not think the proposed railroad construction and operation would adversely affect the pallid sturgeon or peregrine falcon. We did not know whether the proposed railroad construction and operation would adversely affect the black-footed ferret.

The impacts from the dam and reservoir repair project appear to be significantly different compared to the impacts from TRRC's proposed railroad extension. The dam and reservoir repair project impacts will be short-term for the duration of the repair activities. Although the railroad construction impacts may be short-term as well, impacts from railroad operations will continue for the life of the rail line, a projected term of 20 years or more.

We look forward to working with you and your staff throughout the formal consultation process. If we need to provide more information or if we can be of further assistance, please do not hesitate to call me or Dana White, the project leader for this case, at (202) 927-6214.

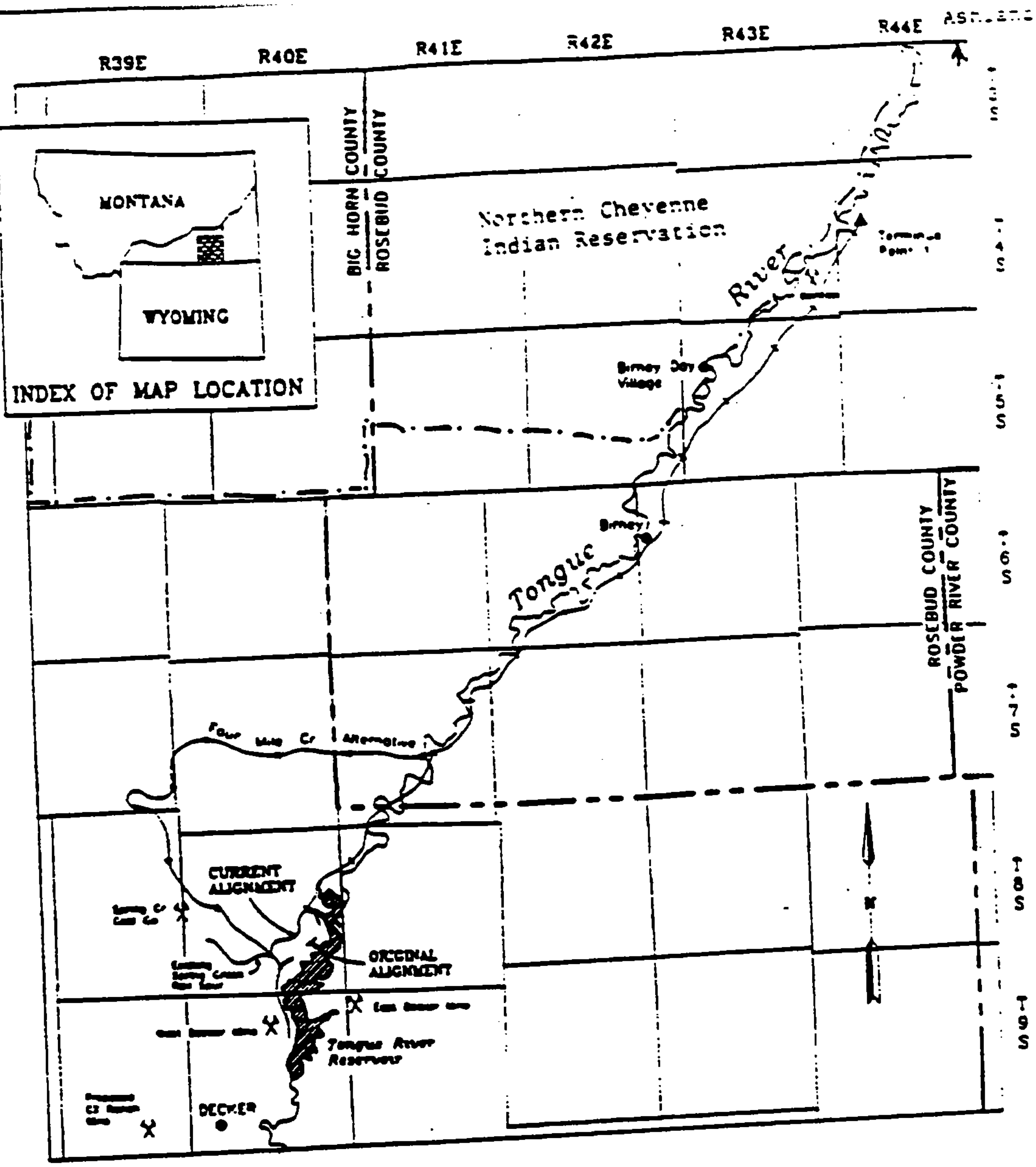
Sincerely yours,

Elaine K. Kaiser

Elaine K. Kaiser
Chief
Section of Environmental Analysis

Attachments

dgw\trrc\formal



Mine Site

STUDIED ALIGNMENTS

T.R.R.C. Extension

Four Mile Cr. Alternative

ROUTE OF THE PROPOSED T.R.R.C. EXTENSION

miles

CERTIFICATE OF SERVICE

I hereby certify that, in compliance with 49 C.F.R. §1105.7(b), (c), a copy of the Environmental Report in Finance Docket No. 30186 (Sub-No. 3) will be served on at the time the Application is filed, by first class mail, postage prepaid, on the agencies listed in 49 C.F.R. §1105.7(b). I further certify that all appropriate agencies were consulted in preparing the Environmental Report.

Linda S. Stein

Linda S. Stein
Attorney for Tongue River
Railroad Company

April 24, 1998